

Figure 1

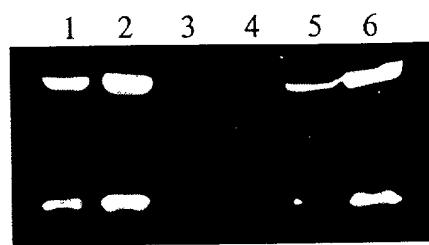


Figure 2

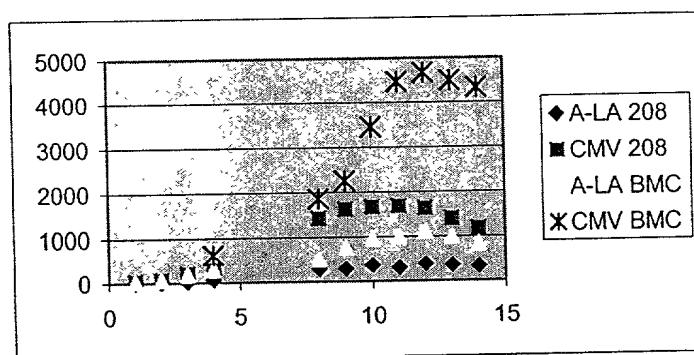


Figure 3

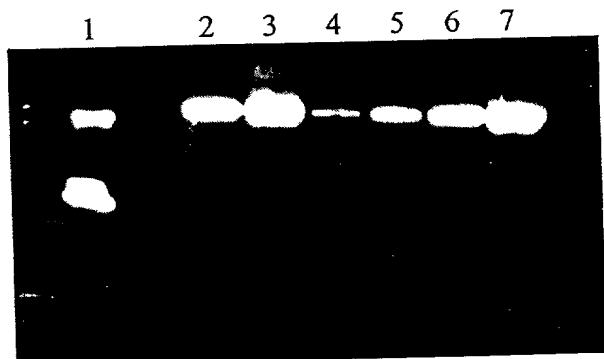


Figure 4
SEQ ID NO:1
Hybrid Human-Bovine Alpha-Lactalbumin Promoter

1 GATCAGTCCTGGGTGGTCATTGAAAGGACTGATGCTGAAGTTGAAGCTCC
 51 AATACTTTGGCCACCTGATGCGAAGAACTGACTCATGTGATAAGACCCCTG
 101 ATACTGGGAAAGATTGAAGGCAGGAGGAGAAGGGATGACAGAGGATGGAA
 151 GAGTTGGATGGAATCACCAACTCGATGGACATGAGTTGAGCAAGCTTCC
 201 AGGAGTTGGTAATGGGCAGGGAAAGCCTGGCGTGCAGTCCATGGGTT
 251 GCAAAGAGTTGGACACTACTGAGTGAUTGAACGTGAACTGATAGTGTAA
 301 CATGGTACAGAATATAGGATAAAAAAGAGGAAGAGTTGCCCTGATTCTG
 351 AAGAGTTGTTAGGATATAAAAGTTAGAATACCTTAGTTGGAAAGTCTTA
 401 AATTATTTACTTAGGATGGGTACCCACTGCAATATAAGAAATCAGGCTT
 451 AGAGACTGATGTAGAGAGAATGAGCCCTGGCATACCGAGCTAACAGCT
 501 ATTGGTTATAGCTGTATAACCAATATAACCAATATGGTTATATA
 551 GCATGAAGCTTGATGCCAGCAATTGAAGGAACCATTTAGAACTAGTATC
 601 CTAACACTCATGTTCCAGGACACTGATCTAAAGCTCAGGTTAGAAT
 651 CTTGTTTATAGGCTCTAGGTATATTGTGGGCTTCCCTGGTGGCTCA
 701 GATGGTAAAGTGTCTGCCTGCAATGTGGGTGATCTGGGTTGATCCCTGG
 751 CTTGGGAAGATCCCCTGGAGAAGGAATGGCAACCCACTCTAGTACTCTT
 801 ACCTGGAAAATCCATGGACAGGAGGAGCCTGTAAGCTACAGTCCATGGG
 851 ATTGCAAAGAGTTGAACACAACGTGAGCAACTAAAGCACAGCACAGT
 900 ATACACCTGTGAGGTGAAGTGAAGTTCAATGCAAGGGTCTCCCTGC
 951 ATTGCAAGAAAGATTCTTACCATCTGAGCCACAGGGAAAGCCAAAGAATA
 1001 CTGGACTGGGTAGCCTATTCCCTCCAGGGATCTTCCATCCCAGGAA
 1051 TTGAACTGGAGTCTCCTGCATTTCAGGTGGATTCTCACCAAGCTGAAC
 1101 CCAGGTGGATACTACTCCAATATTAAGTCTTAAAGTCCAGTTTCCA
 1151 CCTTCCCAAAAGGTTGGTCACTCTTTTAACCTTCTGTGGCTACT
 1201 CTGAGGCTGTCTACAAGCTTATATATTATGAACACATTATTGCAAGTT
 1251 GTTAGTTTAGATTACAATGTGGTATCTGGCTATTAGTGGTATTGGT
 1301 GTTGGGATGGGAGGCTGATAGCATTCTCAGAGGGCAGCTAGATACTGTC
 1351 ATACACACTTTCAAGTTCTCCATTGGTGAATAGAAAGTCTCTGGAT
 1401 CTAAGTTATATGTGATTCTCAGTCTGTGGTCAATTCTATTCTACTCC
 1451 TGACCACTAACAAAGGAACAGATATCAAGGGACACTTGTGTTGTTCA
 1501 TGCCTGGGTTGAGTGGGCATGACATATGTTCTGGCCTTGTACATGGC
 1551 TGGATTGGTTGGACAAGTGCCTGATCTGTGGACTGTGGCATGTGA
 1601 TGACATACACCCCTCTCACATTCTGCATGTCTAGGGGGAAAGGGGG
 1651 AAGCTCGGTATAGAACCTTATTGTATTCTGATTGCTCACCTTAT
 1701 ATTGCCCTCATGCCCTTGTCTCAAGTAACCAAGAGACAGTGTTC
 1751 CCAGAACCAACCCCTACAAGAAACAAAGGGCTAACAAAGCCAATGGGAA
 1801 GCAGGATCATGGTTGAACCTTTCTGGCCAGAGAACAAACACTGCTATG
 1851 GACTAGATACTGGGAGAGGGAAAGGAAAGTAGGGTGAATTATGGAAGGA
 1901 AGCTGGCAGGCTCAGCGTTCTGTCTGGCATGACCAGTCTCTTCTCATT
 1951 CTCTCCTAGATGTAGGGCTGGTACCAAGGCCCTGAGGCTTCTGCAT
 2001 GAATATAAAATATGAAACTGAGTGAUTGCTTCCATTTCAGGTTCTGGGG
 2051 GCGCCGAATTGAGCTCGTACCCGGGATCTCGAGGGGGCCCGGTAC
 2101 C

1 - 1525 Bovine alpha lactalbumin 5' flanking region (-2000 to -550 from the bovine alpha-lactalbumin transcription start point)
 1526 - 2056 Human alpha-lactalbumin 5' flanking region (-600 to +15 from the human alpha-lactalbumin transcription start point)
 2057 - 2101 Multiple cloning site

Figure 5
SEQ ID NO:2
Mutated PPE Sequence

1 GATTACTTACTGGCAGGTGCTGGGGCTTCCGAGACAATCGCGAACATCT
51 ACACCAACACCGCCTCGACCAGGGTGAGATATCGGCCGGGACCGCG
101 GCGGTGGTAATTACAAGCGAGGATCCGATTACTTACTGGCAGGTGCTGGG
151 GGCTTCCGAGACAATCGCGAACATCTACACCAACACCGCCTCGACC
201 AGGGTGAGATATCGGCCGGGACGCCGGTGGTAATTACAAGCG

1 - 119 Mutated PPE
120 -126 Linker
127 - 245 Mutated PPE

Figure 6
SEQ ID NO:3
IRES-Signal Peptide Sequence

1 GGAATTGCCCCCTCTCCCTCCCCCCCCCTAACGTTACTGGCCGAAGCCG
51 CTTGGAATAAGGCCGGTGTGCGTTGTCTATATGTTATTTCCACCATAT
101 TGCCGTCTTTGGCAATGTGAGGGCCCGAAACCTGGCCCTGTCTTCTG
151 ACGAGCATTCTAGGGTCTTCCCCCTCGCCAAAGGAATGCAAGGTCT
201 GTTGAATGTCGTGAAGGAAGCAGTCCTCTGGAAGCTTCTTGAAGACAAA
251 CAACGTCTGTAGCGACCCTTGCAGGCAGCGGAACCCCCCACCTGGCGAC
301 AGGTGCCCTCTGCCGAAAGCCACGTGTATAAGATAACACCTGCAAAGGC
351 GGCACAAACCCAGTGCCACGTGTGAGTTGGATAGTTGTGAAAGAGTC
401 AATGGCTCTCCTCAAGCGTATTCAACAAGGGGCTGAAGGATGCCAGAAG
451 GTACCCCCATTGTATGGGATCTGATCTGGGCTCGGTGCACATGCTTAC
501 ATGTGTTAGTOGAGGTTAAAAAAACGTCAGGCCCCCGAACCAACGGGG
551 ACGTGGTTTCCTTGTGAAAAACACGATGATAATATGCCCTCCTTGTCTC
601 TCTGCTCCTGGTAGGCATCTATTCCATGCCACCCAGGCCGGCGCCATGG
651 GATATCTAGATCTCGAGCTCGCGAAAGCTT

1 - 583 IRES
584 - 640 Modified bovine alpha-lactalbumin signal peptide coding region
641 - 680 Multiple cloning site

Figure 7a
SEQ ID NO:4
CMV MN14 Vector

1 CGGATCCGGCATTAGCCATATTATTCATTGGTATATAGCATAAATCAA
 51 TATTGGCTATTGGCATTGCATACTGGTATCCATATCATAATATGTACA
 101 TTTATATTGGCTCATGTCCAACATTACCGCCATGGACATTGATTATTG
 151 ACTAGTTATTAAATAGTAATCAATTACGGGGTATTAGTCATAGCCATA
 201 TATGGAGTTCCGCTTACATAACTTACGGTAAATGGCCCGCTGGCTGAC
 251 CGCCCAACGACCCCCGCCATTGACGTCAATAATGACGTATGTTCCATA
 301 GTAACGCCAATAGGGACTTCCATTGACGTCAATGGGTGGAGTATTACG
 351 GTAAACTGCCCACTTGCAGTACATCAAGTGTATCATATGCCAAGTACGC
 401 CCCCTATTGACGTCAATGACGGTAAATGGCCCGCTGGCATTATGCCAG
 451 TACATGACCTTATGGGACTTCCACTTGGCAGTACATCTACGTATTAGT
 501 CATGCTATTACCATGGTATGCGGTTTGGCAGTACATCAATGGGCCTG
 551 GATAGCGGTTTGAACAGCAGGGGATTCCAAGTCTCCACCCATTGACGTC
 601 AATGGGAGTTTGTGGCACC AAAAATCAACGGGACTTCCAAAATGTCG
 651 TAACAACCTCCGCCATTGACGCAAATGGCGGTAGGCATGTACGGTGGG
 701 AGGCTATATAAGCAGAGCTGTTAGTGAACCGTCAGATGCCCTGGAGA
 751 CGCCATCCACGCTGTTGACCTCCATAGAAGACACCGGACCGATCCAG
 801 CCTCGCGGCCAAGCTCTCGACGGATCCCCGGGAATTAGGACCTCA
 851 CCATGGGATGGAGCTGATCATCCTCTTGGTAGCAACAGCTACAGGT
 901 GTCCACTCCGAGGTCCAACGGTGGAGAGCGGGGGAGGTGTTGCAACC
 951 TGGCCGGTCCCTGCGCTGCTCGATCTGGCTTCGATTTACCA
 1001 CATATTGGATGAGTTGGGTGAGACAGGCACCTGGAAAAGGTCTTGAGTGG
 1051 ATTGGAGAAATCATCCAGATAGCAGTACGATTAACATATGCCCGTCTCT
 1101 AAAGGATAGATTACAATATCGCGAGACAACGCCAAGAACACATTGTTCC
 1151 TGCAATGGACAGCCTGAGACCCGAAGACACCAGGGCTATTTTGTGCA
 1201 AGCCTTACTTCGGCTTCCCTGGTTGCTTATGGGGCAAGGGACCCC
 1251 GGTACCCGTCCTCCAGCCTCCACCAAGGGCCATGGCTCTCCCCCTGG
 1301 CACOCTCTCCAAGAGCACCCTGAGGGGACAGCGGCGCTGGCTGCG
 1351 GTCAAGGACTACTCCCGAACCGGTGACGGTGTGTTGAACTCAGGCGC
 1401 CCTGACCAGCGCGTGCACACCTTCCCGGCTGCTCTACAGCCTCAGGAC
 1451 TCTACTCCCTCAGCAGCGTGGTGACCGTGCCCTCCAGCAGCTGGGACCC
 1501 CAGACCTACATCTGACAGTGAATACAAGCCCAGCAACACCAAGGTGGA
 1551 CAAGAGAGTTGAGCCAAATCTGTGACAAAACACACATGCCAACCGT
 1601 GCCCAGCACCTGAACCTGGGGGGACCGTCAGTCTCTCTTCCCCCA
 1651 AAACCAAGGACACCCCTCATGATCTCCGGACCCCTGAGGTACATGCGT
 1701 GGTGGTGGACGTGAGCCACGAAGACCTGAGGTCAAGTCAACTGGTACG
 1751 TGGACGGCGTGGAGGTGCTATGCCAAGACAAGCCGCGGGAGGAGCAG
 1801 TACAACAGCACGTACCGTGTTGCTCAGCGTCCTCACCGTCCTGCACCA
 1851 CTGGCTGAATGCCAAGGAGTACAAGTGCAGGTCTCAACAAAGCCCTCC
 1901 CAGCCCCCATCGAGAAAACATCTCAAAGCCAAAGGGCAGCCCCGAGAA
 1951 CCACAGGTGTACACCCCTGCCCATCCGGGAGGAGATGACCAAGAACCA
 2001 GGTCAAGCCTGACCTGCCCTGGTCAAAGGCTTCTATCCCAGCGACATGCCG
 2051 TGGAGTGGGAGAGCAATGGGCAGCCGGAGAACAAACTACAAGACCA
 2101 CCCCTGCTGGACTCCGACCGCTCTTCTCTCTATAGCAAGCTCACCGT
 2151 GGACAAGAGCAGGTGGCAGGGAAACGTCTCTCATGCTCCGTGATGC
 2201 ACGAGGCTCTGCACAACCAACTACACGCGAGAACAGGCTCTCCCTG
 2251 GGGAAATGAAAGCCGAATTGCCCTCTCCCTCCCCCCCCCTAACGTTA
 2301 CTGGCCGAAGCCGTTGAAATAAGGCCGTGCGTTGTTATATGTTA
 2351 TTTTCCACCATATTGCCGTCTTGGCAATGTGAGGGCCCGAAACCTGG
 2401 CCCTGTCTCTGACGAGCATTCTAGGGCTTCTCCCTCTGCCAAAG
 2451 GAATGCAAGGTCTGTGAATGTCGTGAAGGAAGCAGTCTCTGGAAAGCT
 2501 TCTTGAAGACAAACACGTCGTAGCGACCCCTTGCGAGCGGGAAACCC
 2551 CCCACCTGGCGACAGGTGCCCTGCCGGCAAAAGCCACGTGTATAAGATA
 2601 CACCTGCAAAGCGGCCACAACCCAGTGCACGTTGTGAGTTGGATAGTT
 2651 GTGGAAAGAGTCAAATGGCTCTCCTCAAGCGTATTCAACAAGGGGCTGAA
 2701 GGATGCCAGAAGTACCCATTGTATGGGATCTGATCTGGGCCCTCGGT
 2751 GCACATGCTTACATGTGTTAGTCGAGGTAAAAAAACGTCTAGGCC
 2801 CGAACACGGGACGTGGTTCTTGAAAACACGATGATAATATGG

Figure 7b

2851 CCTCCCTTGCTCTCTGCTCCTGGTAGGCATCCTATTCCATGCCACCCAG
 2901 GCCGACATCCAGCTGACCCAGAGCCCAAGCAGCCTGAGCGCCAGCGTGGG
 2951 TGACAGAGTGACCATCACCTGTAAGGCCAGTCAGGATGTGGGTACTCTG
 3001 TAGCCTGGTACCAAGCAGAAGCCAGGTAAAGGCTCCAAAGCTGCTGATCTAC
 3051 TGGACATCCACCCGGCACACTGGTGTCCAAGCAGATTCAAGCGGTAGCGG
 3101 TAGCGTACCGACTTCACCTTCACCATCAGCAGCCTCCAGCCAGAGGACA
 3151 TCGCCACCTACTACTGCCAGCAATATAGCCTCTATCGGTCGTTGGCCAA
 3201 GGGACCAAGGTGAAATCAAACGAACGTGGCTGCACCATCTGTCTTCTAT
 3251 CTTCCCGCCATCTGATGAGCAGTTGAATCTGGAACACTGCCTCTGTTGT
 3301 GCCTGCTGAATAACTTCTATCCCAGAGAGGCCAAAGTACAGTGGAAAGGTG
 3351 GATAACGCCCTCCAATCGGTAACTCCAGGAGAGTGTACAGAGCAGGA
 3401 CAGCAAGGACAGCACCTACAGCCTCAGCAGCACCTGACGCTGAGCAAAG
 3451 CAGACTACGAGAACACAAAGTCTACGCCTGCGAAGTCACCCATCAGGGC
 3501 CTGAGCTGCCCGTCACAAAGAGCTTCAACAGGGGAGAGTGTAGAGATC
 3551 TAGGCCTCCTAGTCGACATCGATAAAAATAAAAGATTTTATTAGTCTCC
 3601 AGAAAAAGGGGGAAATGAAAGACCCCACCTGTAGGTTGGCAAGCTAGCT
 3651 TAAGTAACGCCATTTGCAAGGCATGGAAAAATACATAACTGAGAATAGA
 3701 GAAGTCAGATCAAGGTCAAGGAACAGATGGAACAGCTGAATATGGGCCAA
 3751 ACAGGATATCTGTGGTAAGCAGTTCCTGCCCGCTCAGGGCCAAGAAC
 3801 GATGGAACAGCTGAATATGGGCAACAGGATATCTGTGGTAAGCAGTTC
 3851 CTGCCCCGGCTCAGGGCCAAGAACAGATGGTCCCCAGATGCGGTCCAGCC
 3901 CTCAGCAGTTCTAGAGAACATCAGATGTTCCAGGGTCCCCAAGGAC
 3951 CTGAAATGACCCCTGTGCCTTATTGAACTAACCAATCAGTCGCTTCTCG
 4001 CTTCTGTTCGCGCCTCTGCTCCCCGAGCTCAATAAAAGAGGCCAAC
 4051 CCCTCACTGGGGCGCCAGCCTCCGATTGACTGAGTCGCCGGGTACCC
 4101 GTGTATCCAATAAACCTCTTGCAAGTGCATCCGACTTGTGGTCTCGCTG
 4151 TTCCTGGGAGGGTCTCCTGTAGTGACTACCCGTAGCGGGGGTC
 4201 TTTCAT

1 - 812 CMV promoter/enhancer
 853-855 MN14 antibody heavy chain gene signal peptide start codon
 2257 - 2259 MN14 antibody heavy chain gene start codon
 2271 - 2846 EMCV IRES
 2847 - 2849 Bovine alpha-lactalbumin signal peptide start codon
 2904 - 2906 First codon mature MN14 antibody light chain gene
 3543 - 3544 MN14 antibody light chain gene stop codon
 3614 - 4207 MoMuLV 3' LTR

Figure 8a
SEQ ID NO:5
CMV LL2 Vector

1 GGATCCGGCCATTAGCCATATTATTCAATTGGTTATATAGCATAAATCAAT
 51 ATTGGCTATTGGCCATTGCATACGTTATCCATATCATAATATGTACAT
 101 TTATATTGGCTCATGTCAAACATTACCGCCATGGACATTGATTATTGA
 151 CTAGTTATTAATAGTAATCAATTACGGGTATTAGTCATAGCCCATAT
 201 ATGGAGTTCCGCGTTACATAACTTACGGTAAATGGCCCGCTGGCTGACC
 251 GCCCAACGACCCCCGCCATTGACGTCAATAATGACGTATGTTCCCATA
 301 TAACGCCAATAGGGACTTCCATTGACGTCAATTGGGTGGAGTATTACGG
 351 TAAACTGCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCC
 401 CCCTATTGACGTCAATGACGGTAAATGGCCGCCCTGGCATTATGCCAGT
 451 ACATGACCTTATGGGACTTCCACTTGGCAGTACATCTACGTATTAGTC
 501 ATCGCTATTACCATGGTATGCGGTTTGGCAGTACATCAATGGCGTGG
 551 ATAGCGGTTGACTCACGGGATTCCAAGTCTCCACCCATTGACGTCA
 601 ATGGGAGTTGTTGGCACCAAAATCAACGGGACTTCCAAAATGTCGT
 651 AACAACTCCGCCATTGACGCAAATGGCGGTAGGCATGTACGGTGGGA
 701 GGTCTATATAAGCAGAGCTCGTTAGTGAACCGTCAGATGCCCTGGAGAC
 751 GCCATCCACGCTGTTGACCTCCATAGAAGACACCGGACCGATCCAGC
 801 CTCCCGGCCCAAGCTCTCGACGGATCCCCGGAATTCAAGGACCTCAC
 851 CATGGATGGAGCTGTATCATCCTCTTGGTAGCAACAGCTACAGGTG
 901 TCCACTCCCAGGTCCAGCTGGTCCAATCAGGGCTGAAGTCAAGAACCT
 951 GGGTCATCAGTGAAGGTCTCTGCAAGGCTCTGGCTACACCTTACTAG
 1001 CTACTGGCTGCAGTGGGTCAAGGAGGACCTGGACAGGGCTGGAATGGA
 1051 TTGGATACATTAATCCTAGGAATGATTACTGAGTACAATCAGAACTTC
 1101 AAGGACAAGGCCACAATAACTGCAGACGAATCCACCAATACAGCCTACAT
 1151 GGAGCTGAGCAGCCTGAGGTCTGAGGACACGGCATTTTATTGTGCAA
 1201 GAAGGGATATTACTACGTTCTACTGGGCAAGGCACCACGGTCACCGTC
 1251 TCCTCAGCCTCACCAAGGGCCCATTGGCTTCCCCCTGGCACCCCTCCTC
 1301 CAAGAGCACCTCTGGGGCACAGCGGGCTGGCTGCCTGGTCAAGGACT
 1351 ACTTCCCAGCGGTGACGGTGTGAGGACTCAGGCGCCTGACCAGC
 1401 GGCCTGCACACCTTCCCGCTGCTTACAGTCAGGACTCTACTCCCT
 1451 CAGCAGCGTGGTGGACCTCCAGCAGCTTGGGCAACCAGACCTACA
 1501 TCTGAAACGTCAGTCAACAGCCCAGCAACACCAAGGTGGACAAGAGATT
 1551 GAGCCAAATCTTGTGACAAAACACTCACACATGCCACCGTGCCCAGCACC
 1601 TGAACCTCTGGGGGACCGTCAGTCTTCCCTTCCCCCAGGAAACCAAGG
 1651 ACACCTCATGATCTCCGGACCCCTGAGGTACATGCGTGGTGGTGAC
 1701 GTGAGCCACGAAGACCTGAGGTCAAGTCACACTGGTACGTGGACGGCGT
 1751 GGAGGTGCATAATGCCAAGACAAAGCCGGGGAGGAGCAGTACAACAGCA
 1801 CGTACCGTGTGGTCAGCGTCTCACCGTCTGGCACCAGGACTGGCTGAAT
 1851 GGCAGGAGTACAAGTGCAGGTCTCAACAAAGCCCTCCAGCCCCCAT
 1901 CGAGAAAACCATCTCAAAGCAAAGGGCAGCCCCGAGAACCAACAGGTGT
 1951 ACACCCCTGCCCATCCCCGGAGGAGATGACCAAGAACCGAGTCAGCTG
 2001 ACCTGCCTGGTCAAAGGCTTCTATCCCAGCGACATGCCGTGGAGTGGGA
 2051 GAGCAATGGCAGCCGGAGAACAACTACAAGACACGCCTCCGTGCTGG
 2101 ACTCCGACGGCTCTTCTCTATAGCAAGTCACCGTGGACAAGAGC
 2151 AGGTGGCAGCAGGGGAACTCTCATGCTCCGTGATGCACGAGGCTCT
 2201 GCACAAACCACACCGAGAAGAGCCCTCTCCCTGTCTCCGGAAATGAA
 2251 AGCCGAATTGCCCTCTCCCTCCCCCCCCCTAACGTTACTGCCGAAG
 2301 CCGCTTGGAAATAGGCCGTGCGTTGTCTATATGTTATTTCACCA
 2351 TATTGCCGTCTTGGCAATGTGAGGGCCCGGAAACCTGGCCCTGTCTTC
 2401 TTGACGAGCATCTCCTAGGGTCTTCCCTCTGGCAAAGGAATGCAAGG
 2451 TCTGTTGAATGCGTGAAGGAAGCAGTCTCTGGAGCTTGTGAAGAC
 2501 AAACAAACGTCAGCAGGCCCTTGCAAGGCAGCGGAACCCCCCACCTGGC
 2551 GACAGGTGCCTCTGCCAAAAGCACGTGTTAAAGATAACACCTGCAAA
 2601 GGCAGCACAACCCAGTGCCACGTTGAGTTGGATAGTTGTGGAAAGAG
 2651 TCAAATGGCTCTCTCAAGCGTATTCAACAAGGGCTGAAGGGATGCCAG
 2701 AAGGTACCCATTGTATGGGATCTGATCTGGGCCCTGGTGCACATGCTT
 2751 TACATGTTAGTCGAGGTAAAAAAACGTCTAGGCCCGAACGAC
 2801 GGGACGTGGTTTCTTGGAAACACGATGATAATATGCCCTCTTGT

Figure 8b

2851 CTCTCTGCTCTGGTAGGCATCCTATTCCATGCCACCCAGGCCGACATCC
2901 AGCTGACCCAGTCTCCATCATCTCTGAGCGCATCTGTTGGAGATAGGGTC
2951 ACTATGAGCTGTAAGTCCAGTCAAAGTGTAACTACAGTCAAATCACAA
3001 GAACTACTTGGCCTGGTACCAAGCAGAAACCAGGGAAAGCACCTAAACTGC
3051 TGATCTACTGGGATCCACTAGGGAATCTGGTGTCCCTCGGATTCTCT
3101 GGCAGCGGATCTGGACAGATTACTTCACCATCAGCTCTTCAACC
3151 AGAAGACATTGAAACATATTATTGTACCAATACCTCTCGTGGACGT
3201 TCGGTGGAGGGACCAAGGTGCAGATCAAACGAACGTGTCGACCATCT
3251 GTCTTCATCTTCCCGCCATCTGATGAGCAGTTGAAATCTGGAACGTGCCTC
3301 TGTTGTGTGCCTGCTGAATAACTTCTATCCCAGAGAGGCCAAGTACAGT
3351 GGAAGGGATAACGCCCTCCAATCGGTAACCTCCAGGAGAGTGTCA
3401 GAGCAGGACAGCAAGGACAGCACCTACAGCCTCAGCAGCACCTGACGCT
3451 GAGCAAAGCAGACTACGAGAAACACAAAGTCTACGCCGAGTCACCC
3501 ATCAGGGCCTGAGCTGCCGTACAAAGAGCTCAACAGGGAGAGTGT
3551 TAGAGATCTAGGCCTCTAGGTGACATCGATAAAATAAAAGATTTATT
3601 TAGTCTCCAGAAAAAGGGGGAAATGAAAGACCCACCTGTAGGTTGGCA
3651 AGCTAGCTTAAGTAACGCCATTTCGAAGGCATGGAAAAATACATAACTG
3701 AGAATAGAGAAGTTCAAGATCAAGGTCAAGGAACAGATGGAACAGCTGAATA
3751 TGGGCCAAACAGGATATCTGTGGTAAGCAGTTCTGCCCGGCTCAGGGC
3801 CAAGAACAGATGGAACAGCTGAATATGGGCAAACAGGATATCTGTGGTA
3851 AGCAGTTCTGCCGGCTCAGGGCCAAGAACAGATGGTCCCCAGATGCG
3901 GTCCAGCCCTCAGCAGTTCTAGAGAACCATCAGATGTTCCAGGGTGCC
3951 CCAAGGACCTGAAATGACCTGTGCCTTATTGAACTAACCAATCAGTC
4001 GCTTCTCGCTTCTGTCGCGCGTTCTGCTCCCCGAGCTCAATAAAAGAG
4051 CCCACAACCCCTCACTCGGGCGCCAGTCCTCGATTGACTGAGTCGCC
4101 GGGTACCCGTGTATCCAATAAACCTCTGCAGTTGCATCGACTTGTGG
4151 TCTCGCTGTTCTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAG
4201 GTCTTCATT

1 - 812 CMV promoter/enhancer
852 - 854 LL2 antibody heavy chain signal peptide start codon
2247 - 2249 LL2 antibody heavy chain stop codon
2261 - 2836 EMCV IRES
2837 - 2839 Bovine alpha-lactalbumin signal peptide start codon
2894-2896 First codon of mature LL2 antibody light chain gene
3551 - 3553 LL2 antibody light chain gene stop codon
3622 - 4210 MoMuLV 3' LTR

Figure 9a
SEQ ID NO:6
MMTV MN14 Vector

1 CGAGCTGGCAGAAATGGTGAACCTCCGAGAGTGTCCCTACACCTAGGGG
 51 AGAACGAGCCAAGGGTTGTTCCACCAAGGACGACCCGCTGCGCACA
 101 AACGGATGAGCCCCTAGACAAAGACATATTCTCTGCTGCAAACCTT
 151 GGCATAGCTCTGCTTGCCTGGGCTATTGGGGAAGTTGCGGTTCTGC
 201 TCGCAGGGCTCTCACCCCTGACTCTTCAATAAACTCTCTGTGCAAG
 251 ATTACAATCTAAACAATTGAGAACCTGACCTCCTCTGAGGCAAGGA
 301 CCACAGCCAATTCTCTTACAAGCCGATCGATTGTCCTCAGAAAT
 351 AGAAATAAGAATGCTGCTAAAATTATTTTACCAATAAGACCAATC
 401 CAATAGGTAGATTATTAGTTACTATGTTAAGAAATGAATCATTATCTTT
 451 AGTACTATTTTACTCAAATTGAGAACGTTAGAAATGGGAATAGAAAATAG
 501 AAAGAGACGCTCAACCTCAATTGAGAACAGGGTCAAGGACTATTGACCA
 551 CAGGCTAGAAGAAAAAGGGAAAAAGAGTGTGTTGTCAAAATAGGA
 601 GACAGGTGGTGGCAACCCAGGGACTTATAGGGGACCTTACATCTACAGACC
 651 AACAGATGCCCTTACCATATACAGGAAGATATGACTTAAATTGGGATA
 701 GGTGGGTTACAGTCAATGGCTATAAGTGTATATAGATCCCTCCCTT
 751 CGTGAAAGACTCGCCAGAGCTAGACCTCTGGTGTATGTTGTCAGAAGA
 801 AAAGAAAGACGACATGAAACACAGGTACATGTTATTTATCTAGGAA
 851 CAGGAATGCACCTTGGGAAAGATTTCATACCAAGGAGGGACAGTG
 901 GCTGGACTAATAGAACATTCTGCAAAACTATGGCATGAGTTATTAA
 951 TGATTAGCCTGATTTGCCAACCTTGCCTTCCAAGGCTTAAGTAAGT
 1001 TTTGGTTACAAACTGTTCTAAAACAAGGATGTGAGACAAGTGGTTCC
 1051 TGACTTGGTTGGTATCAAAGGTTCTGATCTGAGCTCTGAGTGTCTATT
 1101 TTCCATGTTCTTTGGAATTATCCTAAATCTTATGTTAAATGCTTATGTA
 1151 AACCAAGATATAAAAGAGTGTGATTGGTGTGCTGCTGCCATCCGTCTCCGCT
 1201 TAACATTACCTCTTGTGTGTTGTGCTGCCATCCGTCTCCGCT
 1251 CGTCACTTATCCTCACTTCCAGAGGGTCCCCCGCAGACCCGGCAGC
 1301 CCTCAGGTGGCCGACTGGCGCAGCTGGCGCCGAACAGGGACCCCTCGGA
 1351 TAAGTGACCTTGTCTTATTCTACTATTTGTTGCTCTGTTGTTGTTG
 1401 CTCTATCTTGTCTGGCTATCATCACAAGAGCGGAACGGACTCACCTCAGG
 1451 GAACCAAGCTAGCCGGGGTGCACGGGATCCGATTACTTACTGGCAGGTGC
 1501 TGGGGCTTCCGAGACAATCGCAGACATCTACACCACACAACACCCTC
 1551 GACCAGGGTGGAGATATCGCCGGGGACCGCGGTGGTAATTACAAGCGA
 1601 GATCCGATTACTTACTGGCAGGTGCTGGGGCTTCCGAGACAATCGCGAA
 1651 CATOTACACCCACAACACCGCCTCGACCAGGGTGAGATATCGGCCGGGG
 1701 ACGCGGCGGTGTAATTACAAGCGAGATCCCCGGAATTCAAGGACCTCAC
 1751 CATGGGATGGAGCTGTATCATCCTCTTGGTAGCAACAGCTACAGGTG
 1801 TCCACTCCGAGGTCAACTGGTGGAGAGCGGTGGAGGTGTTGTGCAACCT
 1851 GGCGGTCCCTGCCTGCTGCTCGCATCTGGCTTCGATTTCACAC
 1901 ATATTGGATGAGTTGGGTGAGACAGGCACCTGGAAAAGGTCTTGAGTGG
 1951 TTGGAGAAATTATCCAGATAGCAGTACGATTAACATGCGCCGTCTCTA
 2001 AAGGATAGATTACAATATCGCGAGACAACGCCAAGAACACATTGTTCT
 2051 GCAAATGGACAGCCTGAGACCCGAAGACACCGGGTCTATTGGGCAAGGGACCCG
 2101 GCCTTACTTCCGCTCCCTGGTTGCTTATTGGGCAAGGGACCCG
 2151 GTCACCGTCTCCTCAGCCTCCACCAAGGGCCATCGGTCTTCCCTGGC
 2201 ACCCTCCCAAGGACACCTCTGGGGACAGCGGGCCTGGCTGCCTGG
 2251 TCAAGGACTACTTCCCGAACCGGTGACGGTGTGTTGGAACCTCAGGCC
 2301 CTGACCAAGCGCGTGCACACCTTCCCGCTGTCTACAGTCTCAGGACT
 2351 CTACTCCCTCAGCAGCGTGTGACCGTGCCTCCAGCAGCTTGGCACCC
 2401 AGACTTACATCTGCAACGTGAATCACAGCCCAGCAACACCAAGGTGGAC
 2451 AAGAGAGTTGAGCCAAATCTTGTGACAAAACCTCACACATGCCAACCGTG
 2501 CCCAGCACCTGAACCTCTGGGGGACCGTCAGTCTCCTTCCCCCAA
 2551 AACCCAAGGACACCCATGATCTCCGGACCCCTGAGGTACATGCC
 2601 GTGGTGGACGTGAGCCACGAAGACCCCTGAGGTCAAGTTCAACTGGTACGT
 2651 GGACGGCGTGGAGGTGCAATGCCAAGACAAAGCCGCGGGAGGAGCAGT
 2701 ACAACAGCACGTACCGTGTGGTCAGCGTCCTCACCGTCTGCACCAGGAC
 2751 TGGCTGAATGGCAAGGAGTACAAGTGCAAGGTCTCCAACAAAGCCCTCCC
 2801 AGCCCCCATCGAGAAAACCACATCTCCAAAGCCAAGGGCAGCCCCGAGAAC

9/33

Figure 9b

2851 CACAGGTGTACACCCCTGCCCATCCCGGAGGAGATGACCAAGAACCAAG
 2901 GTCAGCCTGACCTGCCTGGTCAAAGGCTCTATCCCAGCGACATGCCGT
 2951 GGAGTGGGAGAGCAATGGCAGCCGGAGAACAACTACAAGACCACGCC
 3001 CCGTGCCTGGACTCCGACGGCTCCTCTCCCTCTATAGCAAGCTCACC
 3051 GACAAGAGCAGGTGGCAGCAGGGAACGTCTTCTCATGCTCGTGTGCA
 3101 CGAGGCCTGCAACAAACACTACACGAGAAGAGCCTCTCCCTGTCTCC
 3151 GGAAATGAAAGCGAATTGCCCTCTCCCTCCCCCCCCCTAACGTTAC
 3201 TGGCGAAGCCGTTGGAATAAGGCCGTGCGTTGTCTATATGTTAT
 3251 TTTCCACCATATTGCCGTCTTGGCAATGTGAGGGCCGAAACCTGGC
 3301 CCTGTCTTGTGACGAGCATTCTAGGGCTTCCCCTCTGCCAAAGG
 3351 AATGCAAGGTCTGTTGAATGTCGTGAAGGAAGCAGTTCCTCTGGAAGC
 3401 CTTGAAGACAAACAACGTCTGTAGCGACCCCTTGCAGGCAGCGAAC
 3451 CCACCTGGCAGCGTGCCTCTGCCAAAAGCCACGTGTATAAGATAC
 3501 ACCTGCAAAGGGCACAACCCCAGTGCCACGTTGTGAGTTGGATAGTG
 3551 TGGAAAGAGTCAAATGGCTCCTCAAGCGTATTCAACAAGGGCTGAAG
 3601 GATGCCAGAAGTACCCCATGTATGGATCTGATCTGGGCCTCGGTG
 3651 CACATGCTTACATGTGTTAGTCGAGGTTAAAAAACGTCTAGGCCCC
 3701 CGAACACGGGGACGTGGTTCTGAAAAACAGATGATAATATGGC
 3751 CTCCTTGTCTCTGCTCTGGTAGGCATCTATTCCATGCCACCCAGG
 3801 CCGACATCCAGCTGACCCAGAGCCAAAGCAGCCTGAGCGCCAGCGTGG
 3851 GACAGAGTGACCATCACCTGTAAGGCCAGTCAGGATGTGGTACTCTG
 3901 AGCCTGGTACCGAGAACGGCAGGTAAAGCTCCAAAGCTGCTGATCTA
 3951 GGACATCCACCCGGCACACTGGTGTGCCAAGCAGATTAGCGGTAGCG
 4001 AGCGGTACCGACTTCACCTCACCATCAGCAGCCTCAGGCCAGAGGAC
 4051 CGCCACCTACTACTGCCAGCAATATAGCCTCTATCGTCGGTGGCAAG
 4101 GGACCAAGGTGAAATCAAACGAACTGTGGCTGACCATCTGTCTTCATC
 4151 TTCCCGCATCTGATGAGCAGTTGAAATCTGAACTGCCTCTGTTGTG
 4201 CCTGCTGAATAACTCTATCCAGAGAGGCCAAAGTACAGTGGAAAGGTG
 4251 ATAACGCCCTCAATCGGGTAACTCCCAGGAGAGTGTACAGAGCAGGAC
 4301 AGCAAGGACAGCACCTACAGCCTCAGCAGCACCTGACGCTGAGCAAAG
 4351 AGACTACGAGAAACACAAAGTCTACGCCCTGCGAAGTCACCCATCAGGG
 4401 TGAGCTGCCCGTCACAAAGAGCTTCAACAGGGAGAGTGTAGAGATCC
 4451 CCCGGCTGCAGGAATTGATATCAAGCTTATCGATAATCAACCTCTGGA
 4501 TTACAAAATTGTGAAAGATTGACTGTTACTATGTTGCTCCTT
 4551 TTACGCTATGTGGATACGCTGCTTAATGCCCTTGATCATGCTATTGCT
 4601 TCCCGTATGGCTTCATTCTCCTCTGTATAAATCCTGGTTGCTGTC
 4651 TCTTATGAGGAGTTGTTGCCCCGTTGTCAGGCAACGTGGCTGGTGTGCA
 4701 CTGTGTTGCTGACGCAACCCCACTGGTGGGATTGCCACCACTGT
 4751 CAGCTCTTCCGGGACTTCGCTTCCCCCTCCATTGCCACGGGG
 4801 ACTCATGCCGCGCTGCCCTGCCGCTGCTGGACAGGGCTGGCTGTTGG
 4851 GCACTGACAATTCCGGTGTGTTGCCACCTGGATTCTGCGGGACGTCT
 4901 CTGCTCGCCTGTGTTGCCACCTGGATTCTGCGGGACGTCTCTGCTA
 4951 CGTCCTTCGGCCCTCAATCCAGCGGACCTCCCTCCCGCCGCTGCTGC
 5001 CGGCTCTGCCCTCTCCGCTCTGCCCTCAGACGACTCGG
 5051 ATCTCCCTTGGCCGCTCCCCGCTGATCGATAACCGTCAACATCGATA
 5101 AAATAAAAGATTATTTAGTCTCCAGAAAAGGGGGAAATGAAAGACCC
 5151 CACCTGTAGGTTGGCAAGCTAGCTTAAGTAACGCCATTGCAAGGCAT
 5201 GGAAAATACATAACTGAGAATAGAGAAGTTCAAGGTAGGAACA
 5251 GATGGAACAGCTGAATATGGCCAAACAGGGATATCTGTGGTAAGCAGTTC
 5301 CTGCCCGGCTCAGGGCCAAGAACAGATGGAACAGCTGAATATGGGCAA
 5351 ACAGGATATCTGTGGTAAGCAGTTCCTGCCCGCTCAGGGCCAAGAAC
 5401 GATGGTCCCCAGATGCCGCTCAGCAGTTCTAGAGAACCATCA
 5451 GATGTTCCAGGGTGCCCAAGGACCTGAAATGACCCCTGTCCTTATTG
 5501 AACTAACCAATCAGTCGCTTCTCGCTTCTGTTCGCGCGCTCTGCTCCC
 5551 CGAGCTCAATAAAAGAGCCCACAACCCCTACTCGGGGCGCCAGTCCTCC
 5601 GATTGACTGAGTCGCCGGGTACCCGTATCCAATAACCCCTCTGCAAG
 5651 TTGCACTCGACTTGTGGCTCGCTGTTCCCTGGGAGGGTCTCCTCTGAGT
 5701 GATTGACTACCGTCAGCGGGGTCTTCATT

1 - 1457 Mouse mammary tumor virus LTR
 1475 - 1726 Double mutated PPE sequence

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Figure 9c

1752 - 1754	MN14 heavy chain signal peptide start codon
3156 - 3158	MN14 heavy chain stop codon
3170 - 3745	EMCV IRES
3746 - 3748	Bovine alpha-lactalbumin signal peptide start codon
3803 - 3805	First codon of mature MN14 light chain gene
4442 - 4444	MN14 antibody light chain gene stop codon
4487 - 5078	WPRE sequence
5133 - 5372	MoMuLV 3' LTR

Figure 10a
SEQ ID NO:7
Alpha-Lactalbumin MN14 Vector

1 AAAGACCCCACCGTAGGTGGCAAGCTAGCTTAAGTAACGCCACTTGCA
51 AGGCATGGAAAAATACATAACTGAGAATAGAAAAGTTCAGATCAAGGTCA
101 GGAACAAAGAACAGCTGAATACCAAACAGGATATCTGTGTAAGCGGTT
151 CCTGCCCGGCTCAGGGCCAAGAACAGATGAGACAGCTGAGTGTGGCC
201 AAACAGGATATCTGTGTAAGCAGTCTCTGCCCGCTCGGGCCAAGAA
251 CAGATGGTCCCCAGATCGGGTCCAGCCCTCAGCAGTTCTAGTGAATCAT
301 CAGATGTTCCAGGTGCCCAAGGACCTGAAAATGACCTGTACCTTAT
351 TTGAACTAACCAATCAGTCGCTTCTCGCTTCTGTCGCGCTTCCGCT
401 CTCCGAGCTAATAAGAGCCCACAACCCCTCACTCGGCGGCCAGTCT
451 TCCGATAGACTCGCGTCCGGGTACCGTATTCCTAATAAGCCTCTTG
501 CTGTTGATCGAATCGTGGTCTCGCTGTTCTGGAGGGTCTCCCT
551 GAGTGGATTGACTACCCACGACGGGGCTTCTTCTGGGGGCTGTCGG
601 GATTGGAGACCCCTGCCAGGGACCCGACCCACCCGGAGGTAAG
651 CTGGCCAGCAACTTATCTGTCTGACTAGTTAGCTAATAGCTGTATCTGG
701 ATGTTATGCGCTGCGTCTGACTAGTTAGCTAATAGCTGTATCTGG
751 CGGACCGTGGTGAACGACTGACGAGTTCTGAACACCCGGCCAAACCTGG
801 GAGACGTCCCAGGGACTTGGGGCCGTTTGTGGCCGACCTGAGGAA
851 GGGAGTCGATGTGGAATCGGACCCCGTCAGGATATGTGGTCTGGTAGGA
901 GACGAGAACCTAAACAGTTCCCGCTCCGTCTGAATTGGCTTCCGGT
951 TTGGAACCGAAGCCGCGCTTGTCTGCTGCAGCGCTGCAGCATCGTC
1001 TGTGTTGCTCTGACTGTGTTCTGTATTGTCTGAAAATTAGGGC
1051 CAGACTGTTACCACTCCCTTAAGTTGACCTTAGGTCACTGGAAAGATGT
1101 CGAGCGGATCGCTACAACCAGTCGGTAGATGTCAAGAAGAGACGTTGGG
1151 TTACCTCTGCTCTGCAAGATGCCAACCTTAACGTCGGATGGCCGCGA
1201 GACGGCACCTTAACCGAGACCTCATCACCCAGGTTAAGATCAAGGTCTT
1251 TTACCTGGCCCGCATGGACACCCAGACCCAGGTTCCCTACATCGTGACCT
1301 GGGAGCCCTGGCTTTGACCCCCCTCCCTGGGTCAGGCCCTTGTACAC
1351 CCTAACGCTCCGCCCTCTTCCCTCCATCCGCCCGTCTCTCCCCCTTGA
1401 ACCTCCTCGTCGACCCCGCTCGATCCTCCCTTATCCAGCCCTCACTC
1451 CTTCTAGGGCCCGAATTCCGATCTGATCAAGAGACAGGATGAGGATC
1501 GTTTCGATGATTGAACAAGATGGATTGACGCAGGTTCTCCGGCCGCTT
1551 GGGTGGAGAGGCTATTGCGCTATGACTGGGCACACAGAACATCGGCTGC
1601 TCTGATGCCGCGTGTCCGGCTGTCAAGCGCAGGGCGCCGGTTCTTT
1651 TGTCAAGACCGACCTGTCGGTGCCTGAATGAACCTGCAGGACGAGGAG
1701 CGCGGCTATCGGGCTGGCACGACGGCGTTCTGCGCAGCTGTGCTC
1751 GACGTTGTCACTGAAGCGGAAGGGACTGGCTGCTATTGGCGAAGTGC
1801 GGGGCAGGATCTCCTGTCATCTCACCTTGCTCTGCCGAGAAAGTATCCA
1851 TCATGGCTGATGCAATGCGCGGCTGCATACGCTTGATCCGGTACCTGC
1901 CCATCGACCACCAAGCGAAACATCGCATCGAGCGAGCACGTACTCGGAT
1951 GGAAGCCGGTCTTGTGATCAGGATGATCTGGACGAAGAGCATCAGGGC
2001 TCGGCCAGCGAACTGTGCGCCAGGCTCAAGGGCGCGATGCCGACGGC
2051 GAGGATCTCGCTGACCATGGCGATGCCGCTTGCGAATATCATCGT
2101 GGAAAATGGCCGTTTCTGGATTCATCGACTGTGGCCGGCTGGGTGTGG
2151 CGGACCGCTATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAG
2201 CTTGGCGCGAATGGCTGACCGCTTCTCGTGTCTTACGGTATGCCGC
2251 TCCCGATTGCGAGCGATCGCCTCTATCGCCTCTTGACGAGTTCTTCT
2301 GAGCGGGACTCTGGGTTGCAAATGACCGACCAAGCGACGCCAACCTGC
2351 CATCACGAGATTGCGATTCCACCGCCCTTCTATGAAAGGTTGGGCTTC
2401 GGAATCGTTTCCGGGACGCCGGCTGGATGATCCTCCAGCGGGGATCT
2451 CATGCTGGAGTTCTCGCCACCCGGGCTCGATCCCCTCGCAGTTGGT
2501 TCAGCTGCTGCTGAGGCTGGACGACCTCGCGGAGTTCTACCGGAGTGC
2551 AAATCCGTGGCATCCAGGAAACCAGCAGCGGCTATCCGCGCATCCATGC
2601 CCCCGAAGTGCAGGAGTGAGGGAGGACAGATGGCGCTTGTGAGGCG
2651 ATCCCTAGAAACTAGCGAAAATGCAAGAGCAAAGACGAAAACATGCCACACA
2701 TGAGGAATACCGATTCTCATTAACATATTCAAGGCCAGTTATCTGGGCT
2751 TAAAAGCAGAAGTCCAACCCAGATAACGATCATATACTGGTTCTCTCCA
2801 GAGGTTCAATTACTGAACACTCGTCCGAGAATAACGAGTGGATCAGTCCTG

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Figure 10b

2851 GGTGGTCATTGAAAGGACTGATGCTGAAGTTGAAGCTCCAATACCTTGGC
2901 CACCTGATGCGAAGAACTGACTCATGTGATAAGACCCCTGATACTGGGAAA
2951 GATTGAAGGCAGGAGGAGAAGGGATGACAGAGGATGGAAGAGTTGGATGG
3001 AATCACCAACTCGATGGACATGAGTTGAGCAAGCTCCAGGAGTTGGTA
3051 ATGGGCAGGGAAAGCCTGGGTGCTGAGTCAGTCCATGGGTTGCAAAGAGTTG
3101 GACACTACTGAGTGAACGTGAACTGATAGTGTAAATCCATGGTACAGA
3151 ATATAGGATAAAAAGAGGAAGAGTTGCCCCTGATTCTGAAGAGTTGTAG
3201 GATATAAAAGTTAGAATACCTTAGTTGAAGTCTTAAATTATTACT
3251 TAGGATGGTACCCACTGCAATATAAGAAATCAGGCTTAGAGACTGATG
3301 TAGAGAGAATGAGCCCTGGCATAACAGAAAGCTAACAGCTATTGGTTATAG
3351 CTGTTATAACCAATATATAACCAATATATTGGTTATATAGCATGAAGCTT
3401 GATGCCAGCAATTGAGGAACCATTAGAACTAGTATCCTAAACTCTAC
3451 ATGTTCCAGGACACTGATCTAAAGCTCAGGTCAGAATCTTGTATATA
3501 GGCTCTAGGTGTATATTGTGGGGCTTCCCTGGTGGCTCAGATGGTAAAGT
3551 GTCTGCCTGCAATGTGGGTGATCTGGGTCGATCCCTGGCTTGGGAAAGAT
3601 CCCCTGGAGAAGGAAATGCAACCCACTCTAGTACTCTTACCTGGAAAAT
3651 TCCATGGACAGAGGAGCCTGTAAGCTACAGTCATGGGATTGCAAAGAG
3701 TTGAAACACAACGTGAGCAACTAACGCACAGCACAGTACAGTATACACCTGTG
3751 AGGTGAAGTGAAGTGAAGGTTCAATGCAGGGTCTCCTGCATTGCAGAAAG
3801 ATTCTTACCATCTGAGCCACCAGGGAAAGCCCAGAAACTGGAGTGGGT
3851 AGCCTATTCTCTCAGGGATCTTCCCACCCAGGAATTGAACACTGGAG
3901 TCTCTGCATTTCAGGTGATTCTCACCGCTGAACATACCAAGGTGGATA
3951 CTACTCCAATATTAAGTCTTAAAGTCCAGTTTCCCACCTTCCCAA
4001 AAGGTTGGGTCACTCTTTTAACCTCTGTGGCTACTCTGAGGCTGTC
4051 TACAAGCTTATATATTTATGAACACATTATTGCAAGTTAGTTAGTTAG
4101 ATTTACAATGGTGTATCTGGCTATTAGTGTATTGGTGGTTGGGATGG
4151 GGAGGCTGATAGCATCTCAGAGGGCAGCTAGATACTGTCATACACACTT
4201 TCAAGTTCTCCATTGGTGAATAGAAAGTCTCTGGATCTAAGTTATAT
4251 GTGATTCTCAGTCTCTGTGGTCATATTCTATTCTACTCTGACCACTCAA
4301 CAAGGAACCAAGATATCAAGGGACACTTGTGTTGTTCATGCCTGGGTG
4351 AGTGGGCCATGACATATGTTCTGGCCTTGTACATGGCTGGATTGGTTG
4401 GACAAGTGCCAGCTCTGATCCTGGACTGTGGCATGTGATGACATACACC
4451 CCCTCTCCACATTCTGCATGTCTCTAGGGGGAAAGGGGAAGCTCGGTAT
4501 AGAACCTTTATGTATTCTGATTGCTACTCTTATATTGCCCAT
4551 GCCCTCTTGTCTCAAGTAACCAAGACAGCTGCTCCAGAACCAAC
4601 CCTACAAGAAACAAAGGGCTAACAAAGCCAAATGGGAAGCAGGATCATG
4651 GTTGAACTCTCTGGCAGAGAACAAATACCTGCTATGGACTAGATACT
4701 GGGAGAGGGAAAGGAAAAGTAGGGTGAATTATGGAAGGAAGCTGGCAGGC
4751 TCAGCGTTCTGTCTGGCATGACCAGTCTCTTCTCATCTCTTCTAGA
4801 TGTAGGGCTTGTGTTACCAAGAGCCCTGAGGTTCTGATGAATATAAATA
4851 TATGAAACTGAGTGTGCTTCATTCTAGGTTCTGGGGCGCCGAATTG
4901 GAGCTCGGTACCGGGGATCTCGACGGATCGATTACTTACTGGCAGGTG
4951 CTGGGGCTTCCGAGACAATCGGAACATCTACACCACACAACCGCCT
5001 CGACCAGGGTGAGATATCGGCCGGGACGCGGGCGGTGTAATTACAAGCG
5051 AGATCCGATTACTTACTGGCAGGTGCTGGGGCTTCCGAGACAATCGCGA
5101 ACATCTACACCACACAACCCGCTCGACCAGGGTGAGATATCGGCCGGG
5151 GACCGCGCGGTGTAATTACAAGCGAGATCCCCGGGATTAGGACCTCA
5201 CCATGGGATGGAGCTGTATCATCCTCTTGTGTTAGCAACAGCTACAGGT
5251 GTCCACTCCGAGGTCCAACCTGGTGGAGAGCGGGTGGAGGTGTTGTGCAACC
5301 TGGCCGGTCCCTGCGCTGTCTGCTCCGATCTGGCTTGCATTTCACCA
5351 CATATTGGATGAGTTGGGTGAGACAGGCACCTGGAAAGGCTTGTGAGGG
5401 ATTGGAGAAATTCATCCAGATAGCAGTACAGTAACTATGCGCCGTCT
5451 AAAGGATAGATTACAATATCGCGAGACAACGCGAAGAACACATTTGTTCC
5501 TGCAATGGACAGCCTGAGACCCGAAGACACCGGGTCTATTGGGCAAGGGACCC
5551 AGCCTTACTTCGGCTTCCCTGGTTGCTTATTGGGCAAGGGACCC
5601 GGTACCGTCTCCTCAGCCTCCACCAAGGGCCATCGGTCTTCCCCCTGG
5651 CACCCCTCCCTCCAAGAGCACCTCTGGGGCACAGCGGCCCTGGCTGCCCTG
5701 GTCAAGGACTACTTCCCGAACCGGTGACGGTGTGTTGGAACCTCAGGCGC
5751 CCTGACCAGCGCGTGCACACCTTCCCGGCTGCTCTACAGTCCTCAGGAC
5801 TCTACTCCCTCAGCAGCGTGGTGACCGTGCCTCCAGCAGCTTGGGCACC
5851 CAGACCTACATCTGCAACGTGAATCACAAGCCCAGCAACACCAAGGTGGA
5901 CAAGAGAGTTGAGCCAAATCTGTGACAAAACACATGCCACCCT

Figure 10c

5951 GCCCAGCACCTGAACCTCTGGGGGACCGTCAGTCCTCCCTCTCCCCCA
6001 AAACCCAAGGACACCCTCATGATCTCCGGACCCCTGAGGTACATGCGT
6051 GGTGGTGGACGTGAGCCACGAAGACCTGAGGTCAAGTTCAACTGGTACG
6101 TGGACGGCGTGGAGGTGCATAATGCCAAGACAAAGCCGCGGGAGGAGCAG
6151 TACAACAGCACGTACCGTGTGGTCAGCGTCTCACCGTCTGCACCAGGA
6201 CTGGCTGAATGCCAAGGAGTACAAGTGCAAGGTCTCCAACAAAGCCCTCC
6251 CAGCCCCATCGAGAAAACCATCTCCAAGCCAAGGGCAGCCCCGAGAA
6301 CCACAGGTGTACACCCCTGCCCTGGTCAAAGGTTCTATCCCAGCGACATGCCG
6351 GGTAGCCTGACCTGCCCTGGTCAAAGGTTCTATCCCAGCGACATGCCG
6401 TGGAGTGGGAGAGCAATGGCAGCCGGAGAACAACTACAAGACCACGCC
6451 CCCGTGCTGGACTCCGACGGCTCTTCTCTATAGCAAGCTCACCGT
6501 GGACAAGAGCAGGTGGCAGCAGGGAACGTCTCTCATGCTCCGTGATGC
6551 ACGAGGCTCTGCACAACCACTACACCGAGAAGAGCCTCTCCCTGTCTCCC
6601 GGGAAATGAAAGCCGAATTGCCCTCTCCCTCCCCCCCCCTAACGTTA
6651 CTGGCGAAGCCGTTGAAATAAGGCCGGTGTGCGTTGCTATATGTTA
6701 TTTTCCACCATATTGCCGTCTTGTGCAATGTGAGGGCCCGAAACCTGG
6751 CCCTGTCTCTGACGAGCATTCTCTAGGGTCTTCCCTCTGCCAAAG
6801 GAATGCAAGGCTGTGATGCGTAAGGAAGCAGTCCCTGTGAAAGCT
6851 TCTTGAAGACAAACAACGCTGTAGCGACCCCTTGCAGGCAGCGAACCC
6901 CCCACCTGGCAGCGTCTGCCCTGGGCCAAAGCCACGTGTATAAGATA
6951 CACCTGCAAAGGGCACAACCCCCAGTGCCACGGTGTGAGTTGGATAGTT
7001 GTGGAAGAGTCAAATGGCTCTCTCAAGCGTATTCAACAAGGGCTGAA
7051 GGATGCCAGAAGGTACCCCATTGTATGGGATCTGATCTGGGCTCGGT
7101 GCACATGTTTACATGTGTTAGTCAGGTTAAAAAACACGATGATAATATGG
7151 CCGAACACGGGACGTGTTCTTGAAAGGCTCAAAGCTGCTGATCTAC
7201 CCTCCTTGTCTCTGCTCTGGTAGGCATCTTATTCCATGCCACCCAG
7251 GCCGACATCCAGCTGACCCAGAGGCCAAGCAGCAGCTGAGCGCCAGCGTGGG
7301 TGACAGAGTGACCATCACCTGTAAGGCCAGTCAGGATGTGGGTACTCTG
7351 TAGCCTGGTACCGCAGAACAGGCTCAAAGCTGCTGATCTAC
7401 TGGACATCCACCCGGCACACTGGTGTGCAAGCAGATTAGCGGGTAGCGG
7451 TAGCGGTACCGACTTCACCTCACCATCAGCAGCCTCAGGCCAGAGGACA
7501 TCGCCACCTACTACTGCGCAGCAATATAGCCTCATCGGTGTTGCCCAA
7551 GGGACCAAGGTTGAAATCAAACGAACCTGTTGCTGCACCATCTGCTTCT
7601 CTTCCCGCCATCTGATGAGCAGTTGAAATCTGAAACTGCCCTGTGTTGT
7651 GCCTGCTGAATAACTCTCATCCAGAGAGGCCAAAGTACAGTGGAAAGGTG
7701 GATAACGCCCTCAATCGGGTAACTCCAGGAGAGTGTACAGAGCAGGA
7751 CAGCAAGGACAGCACCTACAGCCTCAGCAGCACCTGACGCTGAGCAAAG
7801 CAGACTACGAGAAACACAAAGTCTACGCCTGCGAAGTCACCCATCAGGGC
7851 CTGAGCTGCCCGTCACAAAGAGCTTCAACAGGGAGAGTGTAGAGATC
7901 CCCCCGGCTCAGGAATTGATATCAAGCTTATCGATAATCAACCTCTGG
7951 ATTACAAAATTGTGAAAGATTGACTGGTATTCTTAACATGTTGCTCCT
8001 TTTACGCTATGTGGATACGCTGCTTAAATGCCTTGTATCATGCTATTGC
8051 TTCCCGTATGGCTTCATTTCTCCTCTGTATAAATCCTGGGTGCTGT
8101 CTCTTATGAGGAGTTGTCGGCCGTTGTCAGGCAACGTGGCGTGGTGTGC
8151 ACTGTGTTGCTGACGCAACCCCCACTGGTGGGCAATTGCCACCCACTG
8201 TCAGCTCCTTCCGGGACTTCGCTTCCCCCTCCCTATTGCCACGGCG
8251 AACTCATGCCGCCTGCCCTGCCCGTGTGGACAGGGCTCGCTGGT
8301 GGCACATGACAATTCCGTGGTGTGTCGGGAAATCATGTCCTTCTTG
8351 GCTGCTCGCCTGTGTTGCCACCTGGATTCTGCGCGGGACGTCTCTGCT
8401 ACGTCCCTCGGCCCTCAATCAGCGGCCACCTCTCTCCCGGGCTGCTG
8451 CCGGCTCTGCCCTCTCCCGTCTTCGCTTCCGCTCAGACGAGTCG
8501 GATCTCCCTTGGGCCCTCCCCGCTGATCGATAACCGTCAACATCGAT
8551 AAAATAAAAGATTATTAGTCAGAAAAAGGGGGAAATGAAAGACC
8601 CCACCTGTAGGTTGGCAAGCTAGCTTAAGTAACGCCATTGCAAGGCA
8651 TGGAAAAATACATAACTGAGAATAGAGAAGTTCAAGATCAAGGTAGGAAC
8701 AGATGGAACAGCTGAATATGGGCCAACAGGATATCTGTGTTAAGCAGTT
8751 CCTGCCCGGCTCAGGGCCAAGAACAGATGGAACAGCTGAATATGGGCCA
8801 AACAGGATATCTGTGTTAAGCAGTTCTGCCCGGCTCAGGGCCAAGAAC
8851 AGATGGTCCCCAGATGCGGTCCAGCCTCAGCAGTTCTAGAGAACCATC
8901 AGATGTTCCAGGGTGCCCAAGGACCTGAAATGACCTGTGCTTATT
8951 GAACTAACCAATCAGTCGCTTCTCGCTTGTGCGCGCTTGTGCTCC
9001 CCGAGCTCAATAAGAGGCCACAACCCCTCACTCGGGCGCCAGTCCTC

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Figure 10d

9051 CGATTGACTGAGTCGCCCGGTACCCGTGTATCCAATAAACCCCTCTGCA
9101 GTTGCATCCGACTTGTGGTCTCGCTGTTCCCTGGAGGGTCTCCTCTGAG
9151 TGATTGACTACCCGTCAAGCGGGGTCTTCATT

1 - 658	MoMuSV 5' LTR
659 - 1468	Extended packaging region
1512 - 2306	Neomycin resistance gene
2661 - 4896	Bovine/human alpha-lactalbumin 5' flanking region
5084 - 5327	Double mutated PPE sequence
6207 - 6209	MN14 antibody heavy chain gene signal peptide start codon
6611-6613	MN14 antibody heavy chain stop codon
6625 - 7200	EMCV IRES
7201 - 7203	Bovine alpha-lactalbumin signal peptide start codon
7258 - 7260	First codon of mature MN14 antibody light chain gene
7897 - 7899	MN14 antibody light gene stop codon
7938 - 8529	WPRE sequence
8600 - 9138	Moloney murine leukemia virus 3' LTR

Figure 11a
SEQ ID NO:8
Alpha-Lactalbumin Bot Vector

1 GATCAGTCCTGGTGGTATTGAAAGGACTGATGCTGAAGTGAGCTCC
 51 AATACTTGGCACCTGATGCGAAGAACTGACTCATGTGATAAGACCCCTG
 101 ATACTGGAAAGATTGAAGCAGGAGAAGGGATGACAGAGGATGGAA
 151 GAGTTGGATGGAATCACCAACTCGATGGACATGAGTTGAGCAAGCTTCC
 201 AGGAGTTGGTAATGGGCAGGAAAGCCTGGCGTGCAGTCATGGGTT
 251 GCAAAGAGTTGGACACTACTGAGTGAUTGAACGACTGATAGTGTAAATC
 301 CATGGTACAGAATATAGGATAAAAAAGAGGAAGAGAGTTGCCCTGATTCTG
 351 AAGAGTTGAGGATATAAAGTTAGAATACCTTAGTTGGAAAGTCTTA
 401 AATTATTTACTTAGGATGGGTACCCACTGCAATATAAGAAATCAGGCTT
 451 AGAGACTGATGAGAGAATGAGCCCTGGCATACAGAAGCTAACAGCT
 501 ATTGGTTAGCTGTATAACCAATATAACCAATATATTGGTTATATA
 551 GCATGAGCTTGTGAGGAACTTGAAGGAACCATTTAGAAGTGTAC
 601 CTAAACTCTACATGTTCCAGACACTGATCTTAAAGCTCAGGTTAGAAT
 651 CTTGTTTATAGGCTCTAGGTGTATATTGTGGGCTTCCCTGGTGGCTCA
 701 GATGGTAAAGTGTCTGCCTGCAATGTGGGTGATCTGGGTCGATCCCTGG
 751 CTTGGGAAGATCCCCGGAGAAGGAAATGGCAACCCACTCTAGTACTCTT
 801 ACCTGGAAAATTCCATGGACAGAGGAGCCTGTAAGCTACAGTCCATGGG
 851 ATTGCAAAGAGTGAACACAAGTGAAGCAACTAAGCACAGCACAGTACAGT
 901 ATACACCTGTGAGGTAAGTGAAGTGAAGGTTCAATGCAGGGTCTCCTGC
 951 ATTGAGAAAGATTCTTACCATCTGAGCCACCAGGGAAAGCCAAGAATA
 1001 CTGGAGTGGGTAGCCTATTCTCTCCAGGGATCTCCATCCCAGGAA
 1051 TTGAAGTGGAGTCTCCTGCATTCAGGTGGATTCTCACAGCTGAACTA
 1101 CCAGGTGGATACTACTCCAATATTAAGTGTAAAGTCCAGTTTCCCA
 1151 CCTTCCAAAAGGTTGGTCACTCTTTTAACCTCTGTGGCCTACT
 1201 CTGAGGCTGTCTACAAGCTTATATATTATGAACACATTATTGCAAGTT
 1251 GTTAGTTTAGATTACAATGTGGTATCTGGCTATTAGTGGTATTGGT
 1301 GTTGGGATGGGGAGGCTGATAGCATCTCAGAGGGCAGCTAGATACTGTC
 1351 ATACACACTTTCAAGTTCTCCATTGGTAAATAGAAAGTCTCTGGAT
 1401 CTAAGTTATATGTGATTCTCAGTCTGTGGTCAATTCTATTCTACTCC
 1451 TGACCACTCAACAAGGAACCAAGATACTAAGGGACACTTGTGTTGTTCA
 1501 TGCCTGGGTGAGTGGGCCATGACATATGTTCTGGGCTTGTACATGGC
 1551 TGGATTGGTTGACAAGTGCCAGCTCTGATCCTGGGACTGTGGCATGTGA
 1601 TGACATACACCCCTCTCCACATTCTGCATGTCTAGGGGGAAAGGGGG
 1651 AAGCTCGGTATAGAACCTTATTGTATTCTGATTGCCTCACTCTTAT
 1701 ATTGCCCATGCCCTCTTGTTCCTCAAGTAACAGAGACAGTGCTTC
 1751 CCAGAACCAACCCCTACAAGAACAAAGGGCTAAACAAAGCCAATGGGAA
 1801 GCAGGATCATGGTTGAACCTTTCTGGCCAGAGAACAAACCTGCTATG
 1851 GACTAGATACTGGGAGAGGGAAAGGAAAGTAGGGTGAATTATGGAAGGA
 1901 AGCTGGCAGGCTCAGCGTTCTGTCTGGCATGACCAGTCCTCTTCTCATT
 1951 CTCTCCTAGATGTAGGGCTGGTACAGAGCCCTGAGGCTTCTGCAT
 2001 GAATATAATATGAAACTGAGTGAATGCTTCCATTCTAGGTTCTGGGG
 2051 GCGCCGAATTGGCTCGGTACCGGGGATCTGACGGATCCGATTACTT
 2101 ACTGGCAGGTGCTGGGGCTCCGAGACAATCGCAACATCTACACCA
 2151 CAACACCGCTCGACCAGGGTGAGATATCGGCCGGGACGCGGGCGGTGGT
 2201 AATTACAAGCGAGATCCGATTACTTACTGGCAGGTGCTGGGGCTTCCGA
 2251 GACAATCGCAACATCTACACCACACAACCCGCTCGACCAGGGTGAGA
 2301 TATCGGCCGGGACCGCCGGTGTAAATTACAAGCGAGATCTCGAGAAC
 2351 TTGTGGAAATCAGGCCATCGATCCCGCCGACCATGGAATGGAGCTG
 2401 GGTCTTCTCTCTCTGAGTAACTACAGGTGTCCACTCCGACATCC
 2451 AGATGACCCAGTCTCCAGGCTCCATCTGCATCTGTGGGAGAAACTGTC
 2501 ACTATCACATGTGAGCAAGTGGGAAATTACACATTATTAGCATGGTA
 2551 TCAGCAGAAACAGGGAAATCTCTCAGCTCCTGGTCTATAATGCAAAA
 2601 CCTTAGCAGTGGTGTGCATCAAGGTTCAAGGTTCAAGTGGCAGTGGGAT
 2651 CAATATTCTCTCAAGATCAACAGCCTGCAGCCTGAAGATTGGGAGGTTA
 2701 TTACTGTCAACATTGGAGTACTCCGTGGACGTTGGTGGAGGCACCA
 2751 AGCTGGAAATCAAACGGGCTGATGCTGCACCAACTGTATCCATCTTCCA
 2801 CCATCCAGTGAGCAGTTAACATCTGGAGGTGCCTCAGTCGTGCTTCTT

Figure 11b

2851 GAACAACTTCTACCCAAAGACATCAATGTCAAGTGGAAAGATTGATGGCA
 2901 GTGAACGACAAATGGCGTCTGAACAGTTGGACTGATCAGGACAGCAAA
 2951 GACAGCACCTACAGCATGAGCAGCACCCCTCACATTGACCAAGGACGAGTA
 3001 TGAACGACATAACAGCTAACAGCTAACAGCTAACAGACATCAACTT
 3051 CACCCATTGTCAAGAGCTCAACAGGAATGAGTGTGAAAGCATCGATT
 3101 CCCCTGAATTGCCCTCTCCCTCCCCCCCCCTAACGTTACTGGCCGAA
 3151 GCGCTTGGAAATAAGGCCGGTGTGCGTTGTCTATATGTTATTCACC
 3201 ATATTGCCGTCTTGCAATGTGAGGGCCCGGAAACCTGCCCTGCTT
 3251 CTTGACGAGCATTCCCTAGGGCTTCCCCTCTGCCAAAGGAATGCAAG
 3301 GTCGTTGAATGTCGTGAAGGAAGCAGTTCCTCTGGAAGCCTTGTGAAGA
 3351 CAAACAAACGTCGTAGCGACCCCTTGCAAGGCAGCGAACCCCCCACCTGG
 3401 CGACAGGTGCCTCTGCCAAAGGCCACGTGATAAGATAACACCTGCAA
 3451 AGGCCGACAACCCAGTGCACGTTGTGAGTTGGATAGTTGTGGAAAGA
 3501 GTCAAATGGCTCTCCCAAGCGTATTCAACAAGGGCTGAAGGATGCCA
 3551 GAAGGTACCCATTGTATGGATCTGATCTGGGCTCGGTGCACATGCT
 3601 TTACATGTGTTAGTCGAGGTTAAAAAAACGTCAGGCCCCCGAACAC
 3651 GGGACGTGGTTCTGAAAAACACGATGATAATATGCCCTCTTG
 3701 TCTCTGCTCTGGTAGGCATCCTATTCCATGCCACCCAGGCCAGGTT
 3751 CAGCTCAGCAGTCTGGGCAGAGCTGTGAGGCTTGAAAGCAGGGCTCAGTC
 3801 GTTGCCTGCAACAGCTCTGGCTCAACATTAAGAACACCTTATGCACT
 3851 GGGTGAAGCAGAGGCCGAAACAGGGCTGGAGTGGATTGAAAGGATTGAT
 3901 CCTGCGAATGGAAACTGAAATATGACCCGAAGTTCCAGGGCAAGGCCAC
 3951 TATAACAGCAGACACATCTCCAACACAGTCACACTGCAGCTCAGCAGCC
 4001 TGACATCTGAGGACACTGCCGTCTATTACTGTGCTAGTGGAGGGAACTG
 4051 GGGTTCTTACTGGGCCAAGGGACTCTGGTCACTGTCTGCAGCCAA
 4101 AACGACACCCCATCTGCTCTTACACTGCCCTGGATCTGCTGCCAAA
 4151 CTAACCTCATGGTGACCCCTGGGATGCCCTGGTCAAGGGCTATTCCCTGAG
 4201 CCAGTGACAGTGCACCTGAAACTCTGGATCCCTGTCAGCGGTGTGCACAC
 4251 CTTCCAGCTGCTGCAGTTGACCTCTACACTCTGAGCAGCTCAGTGA
 4301 CTGCCCCCTCCAGCACCTGGCCAGCGAGACCGTACCTGCAACGTTGCC
 4351 CACCCGGCCAGCAGCACCAAGGTGGACAAGAAAATTGTGCCAGGGATTG
 4401 TACTAGTGGAGGTGGAGGTAGCCACCATCACCATTAAATCTAGAG
 4451 TTAAGCGGCCGTCGAGATCTGACATCGATAATCAACCTCTGGATTACAA
 4501 AATTGTGAAAGATTGACTGGTATTCTTAACTATGTTGCTCTTTACGC
 4551 TATGTGGATACGCTGCTTAATGCCCTTGTATCATGCTATTGCTTCCCGT
 4601 ATGGCTTCATTCTCCCTGTATAAATCTGGTTGCTGTCTCTTA
 4651 TGAGGAGTTGTGGCCCGTGTGCAGGAAACGTGGCGTGGTGTGCACTGTT
 4701 TTGCTGACGCAACCCCACTGGTTGGGATTGCCACCATGTCAGCTC
 4751 CTTCCGGGACTTGCCTTCCCTCCCTATTGCCACGGCGGAACCTCAT
 4801 CGCCGCTGCCCTGCCGCTGCTGGACAGGGCTCGGCTGTTGGCACTG
 4851 ACAATTCCGTGGTGTGTCGGGAAATCATGTCCTTCCCTGGCTGCTC
 4901 GCCTGTGTTGCCACCTGGATTCTGCCGGACGTCCTCTGCTACGTCCC
 4951 TTCCGGCCTCAATCCAGCGGACCTCCTCCCGCCGCTGTCGCCGGCTC
 5001 TGCGGCCTCTCCGCGTCTCGCCTGCCCTCAGACGAGTCGGATCTCC
 5051 CTTGGGCCGCTCCCCGCTGATCGATAAAATAAAAGATTATTAGT
 5101 CTCCAGAAAAGGGGGAAATGAAAGACCCCACCTGTAGGTTGGCAAGCT
 5151 AGCTTAAGTAACGCCATTGCAAGGCATGGAAAATAACATAACTGAGAA
 5201 TAGAGAAGITCAGATCAAGGTCAAGGAACAGATGGAACAGCTGAATATGGG
 5251 CCAAACAGGATATCTGTGTAAGCAGTTCTGCCCCGGCTCAGGGCCAAG
 5301 AACAGATGGAACAGCTGAATATGGGCAAACAGGATATCTGTGGTAAGCA
 5351 GTTCCCTGCCCGGCTCAGGGCCAAGAACAGACAGATGGTCCCCAGATGCGGTCC
 5401 AGCCCTCAGCAGTTCTAGAGAACCATCAGATGTTCCAGGGTCCCCCAA
 5451 GGACCTGAAATGACCCCTGTCGCTTATTGAACTAACCAATCAGTTGCTT
 5501 CTCGCTTCTGTCGCGCCTCTGCTCCCCGAGCTCAATAAAAGAGCCCA
 5551 CAACCCCTCACTCGGGGCCAGTCCTCCGATTGACTGAGTCGCCCGGGT
 5601 ACCCGTGTATCCAATAACCCCTTGTGCAAGTTGCACTTGTGGTCTC

Figure 11c

5651 GCTGTTCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGG
5701 GGTCTTCATT

1 - 2053 Bovine/human alpha-lactalbumin 5' flanking region
2093 - 2336 Double mutated PPE sequence
2387 - 2443 cc49 signal peptide coding region
2444 - 3088 Bot antibody light chain Fab coding region
3112 - 3686 EMCV IRES
3687 - 3745 Bovine alpha-lactalbumin signal peptide coding region
3746 - 4443 Bot antibody heavy chain Fab coding region
4481 - 5072 WPRE sequence
5118 - 5711 Moloney murine leukemia virus 3' LTR

Figure 12a
SEQ ID NO:9
LSNRL Vector

1 TTTGAAAGACCCCACCCGTAGGTGGCAAGCTAGCTTAAGTAACGCCACTT
51 TGCAAGGCATGGAAAATACATAACTGAGAATAGAAAAGTCAGATCAAG
101 GTCAGGAACAAAGAACAGCTGAATACCAAACAGGATATCTGTGGTAAGC
151 GGTTCTGCCCGGCTCAGGGCCAAGAACAGATGAGACAGCTGAGTGATG
201 GGCCAAACAGGATATCTGTGGTAAGCAGTTCTGCCCTCAGCAGTTCTAGTGAA
251 AGAACAGATGGTCCCCAGATGCGGTCCAGCCCTCAGCAGTTCTAGTGAA
301 TCATCAGATGTTCCAGGGTCCCCAAGGACCTGAAAATGACCTGTACC
351 TTATTGAACTAACCAATCAGTCGCTCTCGCTCTGTTCGCGCGCTTC
401 CGCTCTCCGAGCTCAATAAAAGAGCCCCAACCCCTCACTCGCGCGCCA
451 GTCTCCGATAGACTCGCTGCCGGTACCCGTATTCCAAATAAGCCT
501 CTTGCTGTTGCATCCGAATCGTGGTCTCGCTTCTGGAGGGTCTC
551 CTCTGAGTGATTGACTAACCCACGACGGGGTCTTCAATTGGGGGCTCGT
601 CCGGGATTGGAGACCCCTGCCAGGGACCACCGACCCACACCGGAGG
651 TAAGCTGGCCAGCAACTTATCTGTGTCTGCGATTGTCTAGTGCTATG
701 TTTGATGTTATGCCCTGCGTCTGTACTAGTTAGCTAAGCTCTGTAT
751 CTGGCGGACCGTGGTGAACTGACCGAGTTCTGAACACCCGGCGCAACC
801 CTGGGAGACGTCCCAGGGACTTTGGGGCCGTTTGTGGCCCGACCTGA
851 GGAAGGGAGTCGATGTGAATCCGACCCCGTCAGGATATGTGGTTCTGGT
901 AGGAGACGAGAACCTAAAACAGTCCCGCCTCCGTCTGAATTGGCTTT
951 CGGTTGGAACCGAAGCCGCGTCTGTCTGCTGCAGCCAAGCTGGC
1001 TGCAGGTCGAGGACTGGGACCCCTGACCGAACATGGAGAACACAACATC
1051 AGGATTCCCTAGGACCCCTGCTCGTTACAGGGGGTTTTCTTGTGA
1101 CAAGAATCCTCACAAATACCACAGAGTCTAGACTCGTGGTGAATTCTC
1151 AATTTCCTAGGGGAGCACCCACGTGCTCTGGCAAAATTGCAAGTCCCC
1201 AACCTCCAATCACTCACCAACCTCTTGTCTCCAATTGCTCTGGCTATC
1251 GCTGATGTTGCTCGGGCGTTTATCATATTCTCTTCATCCTGCTGCTA
1301 TGCCCATCTTCTGTTGCTCTGGACTACCAAGGTATGTTGCCGT
1351 TTGTCCTCTACTCCAGGAACATCAACTACCGACCGGACATGCAAGA
1401 CCTGCACGATTCTGCTCAAGGAACCTCTATGTTCCCTTGTGCTGT
1451 ACAAAACCTCGGACGGAAACTGCACCTGTTACCCATCCATCATCCTG
1501 GGCTTCGCAAGATTCTATGGAGTGGCCTCAGTCCGTTCTCTGGC
1551 TCAGTTACTAGTGCATTGTTCACTGGTCTAGGGCTTCCCCACT
1601 GTTGGCTTCAGTTATGGATGATGTGGTATTGGGGCAAGTCTGTA
1651 CAACATCTGAGTCCCTTTTACCTCTATTACCAATTTCCTTGTCTT
1701 GGGTATACATTAAACCCCTAATAAAACCAAACGTTGGGGCTACTCCCTA
1751 ACTTCATGGGATATGTAATTGGATGTTGGGTACTTACCGCAAGAACAT
1801 ATTGTAACAAATCAAGCAATGTTCGAAACTGCCTGAAATAGACC
1851 TATTGATTGAAAGTATGTCAGAGACTTGTGGGTCTTTGGCTTGCTG
1901 CCCCTTTACACAATGTGGCTATCCTGCCCTAATGCCTTATATGCATGT
1951 ATACAATCTAACGAGCTTCACTTCTGCCAACTTACAAGGCCTTCT
2001 GTGTAACAAATATCTGAACCTTACCCCGTTGCCCGAACGGTCAGGTC
2051 TCTGCCAAGTGGCTGCTGACGCAACCCCCACTGGATGGGCTTGGCTATC
2101 GGCCATAGCCCATGCCGACCTTGTGGCTCTGCCGATCCCATACT
2151 GCGGAACCTCTAGCAGCTGTTGCTGCCAGGGCTGGAGCGAAACT
2201 TATCGGCACCGAACACTCTGTTGCTCTCTCGGAAATACACCTCTTC
2251 CATGGCTGCTAGGGTGTGCTGCCAACTGGATCCCTCAGGATATGAGT
2301 TTCCCTTTGCACTAGGGAGGGGAAATGAGTCTTATGCAATACACTGT
2351 AGTCTGCAACATGTAACGATGAGTTAGCAACATGCCCTACAAGGAGAG
2401 AAAAACGACCGTGCATGCCGATTGGTGGAAAGTAAGGTGGTACGATGTG
2451 CTTATTAGGAAGGCAACAGACAGGTCTGACATGGATTGGACGAACCACTG
2501 AATTCCGCATTGCAAGAGATAATTGTTAGTGCCTAGCTCGATACAGC
2551 AAACGCCATTGACCATTCACCACATTGGTGTGCACTTCCAAAGCTT
2601 CACGCTGCCGCAAGCACTCAGGGCGCAAGGGCTGCTAAAGGAAGCGGAAC
2651 ACGTAGAAAGCCAGTCCGAGAACCGGTGCTGACCCCGGATGAATGTGAG
2701 CTACTGGGCTATCTGGACAAGGGAAAACGCAAGCGCAAAGAGAAAGCAGG
2751 TAGCTTGCAGTGGCTTACATGGCGATAGCTAGACTGGGCGGTTTATGG
2801 ACAGCAAGCGAACCGGAATTGCCAGCTGGGGCGCCCTCTGTAAGGTTGG

Figure 12b

2851 GAAGCCCTGCAAAGTAAACTGGATGGCTTCTGCCGCCAAGGATCTGAT
2901 GGCGCAGGGGATCAAGATCTGATCAAGAGACAGGATGAGGATCGTTCGC
2951 ATGATTGAACAAGATGGATTGACGCAGGTCTCCGGCCGCTGGGTGGA
3001 GAGGCTATTGGCTATGACTGGCACAACAGACAATCGGCTGCTGATG
3051 CGCCCGTGTCCGGCTGTCAAGCCAGGGGCCGGTCTTTGTCAAG
3101 ACCGACCTGTCCGGTGCCTGAATGAACACTGCAGGACGGCAGCGCGCT
3151 ATCGTGGCTGGCACGACGGCGTTCTTGCGCAGCTGTGCTGACGTTG
3201 TCACTGAAGCGGAAGGGACTGGCTGCTATTGGCGAAGTGCCGGGCAG
3251 GATCTCTGTCATCTCACCTGCTCCTGCCAGAAAAGTATCCATCATGGC
3301 TGATGCAATCGCCGGCTGCATACGCTTGATCCGGTACCTGCCATTG
3351 ACCACCAAGCGAACATCGCATCGAGCGAGCAGTACTCGGATGGAAGCC
3401 GGTCTTGTGATCAGGATGATCTGGACGAAGAGCATCAGGGCTCGGCC
3451 AGCCGAACTGTGCGCAGGCTCAAGGCCGCATGCCGACGGCGAGGATC
3501 TCGTCGTGACCATGGCGATGCCCTGCCGAATATCATGGTGGAAAAT
3551 GGCGCTTTCTGGATTCATGACTGTGGCCGGTGGGTGTGGCGGACCG
3601 CTATCAGGACATAGCGTTGGTACCCGTGATATTGCTGAAGAGCTTGGCG
3651 GCGAATGGCTGACCGCTTCTCGTGTCTTACGGTATGCCGCTCCGAT
3701 TCGCAGCGCATGCCCTCATGCCCTCTTGACGAGTTCTGAGCGGG
3751 ACTCTGGGTCGAAATGACCGACCAAGCGACGCCAACCTGCCATCACG
3801 AGATTCGATTCCACCGCCCTTCTATGAAAGGTTGGCTTCGGAATCG
3851 TTTCCGGGACGGCTGGATGATCTCCAGCGGGGATCTCATGCTG
3901 GAGTCCTCGCCCCACCCCTGGGCTTATTATGGGTTGACTAACCA
3951 TGGGGGAATTGCGCTGGAATAGGAACAGGGACTACTGCTCTAATGGCC
4001 ACTCAGCAATTCCAGCAGCTCAAGCCGAGTACAGGATGATCTCAGGGA
4051 GGTTGAAAATCAATCTCAACCTAGAAAAGTCTCTCACTCCCTGCTG
4101 AAGTTGTCCTACAGAATCGAAGGGCCTAGACTGTTATTCTAAAAGAA
4151 GGAGGGCTGTGCTGCTCTAAAAGAAGAATGTTGCTTCTATGCCGACCA
4201 CACAGGACTAGTGAGAGACAGCATGCCAAATTGAGAGAGAGGGCTTAATC
4251 AGAGACAGAAACTGTTGAGTCAACTCAAGGATGGTTGAGGGACTGTT
4301 AACAGATCCCTGGTTTACACCTGATATCTACCATATTGGGACCCCT
4351 CATTGACTCCTAATGATTGCTCTCGGACCTGCATTCTAATCGAT
4401 TAGCCAATTGTTAAAGACAGGATATCAGTGGTCCAGGCTCTAGTTTG
4451 ACTCAACAATATCACCAGCTGAAAGCCTATAGAGTACGAGCCATAGATAAA
4501 ATAAAAGATTTTATTAGTCTCCAGAAAAAGGGGGGAATGAAAGACCCA
4551 CCTGTAGGTTGGCAAGCTAGCTTAAGTAACGCCATTGCAAGGCATGG
4601 AAAAATACATAACTGAGAATAGAGAATGCTCAGATCAAGGTAGGAACAGA
4651 TGGAACAGCTGAATATGGCCAAACAGGATATCTGTTGTAAGCAGTTCC
4701 GCCCCGGCTCAGGCCAAGAACAGATGGAACAGCTGAATATGGCCAAC
4751 AGGATATCTGTTGTAAGCAGTTCTGCCCGGCTCAGGGCAAGAACAGA
4801 TGGTCCCCAGATGCGGTCCAGCCCTCAGCAGTTCTAGAGAACCATCAGA
4851 TGTTCCAGGGTGCCTCAAGGACCTGAAATGACCCCTGTGCCATTGAA
4901 CTAACCAATCAGTTCGCTTCTCGCTTCTGTCGCGCGCTCTGCTCCCCG
4951 AGCTCAATAAAAGAGGCCACAACCCCTCACTGGGGGCCAGTCCTCCGA
5001 TTGACTGAGTCGCCCGGGTACCGTGATCCAATAACCCCTTGCAGTT
5051 GCATCCGACTTGTGGTCTCGCTGTTCCCTGGGAGGGTCTCTGAGTGA
5101 TTGACTACCCGTCAGCGGGGTCTTCATT

1 - 589	MoMuSV 5' LTR
659 - 897	Retroviral packaging region
1034 - 1714	Hepatitis B surface antigen
2279 - 2595	RSV promoter
2951 - 3745	Neomycin phosphotransferase gene
4537 - 5130	MoMuLV 3' LTR

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Figure 13a
SEQ ID NO:10
Alpha-Lactalbumin cc49IL2 Vector

1 GATCAGTCCTGGTGGTCATTGAAAGGACTGATGCTGAAGTTGAAGCTCC
 51 AATACTTGGCACCTGATGCGAAGAACTGACTCATGTGATAAGACCCCTG
 101 ATACTGGGAAAGATTGAAGGCAGGAGGAGAAGGGATGACAGAGGATGGAA
 151 GAGTTGGATGGAATCACCAACTCGATGGACATGAGTTGAGCAGCTTCC
 201 AGGAGTTGGAATGGCAGGGAAGCCTGGCGTCTGCAGTCCATGGGTT
 251 GCAAAGAGTTGACACTACTGAGTGACTGAAGTGAACGTGAACTGTAATC
 301 CATGGTACAGAATATAGGATAAAAAGAGGAAGAGTTGAGCAGTCTG
 351 AAGAGTTGAGGATATAAAAGTTAGAATACCTTAGTTGGAAAGTCTTA
 401 AATTATTTACTTAGGATGGGTACCCACTGCAATATAAGAAATCAGGCTT
 451 AGAGACTGATGAGAGAATGAGCCTGGCATACCAAGCTAACAGCT
 501 ATTGGTTATAGCTGTATAACCAATATATAACCAATATGGTTATATA
 551 GCATGAAGCTTGATGCCAGCAATTGAGGAACCATTTAGAACTAGTATC
 601 CTAAACTCTACATGTTCCAGGACACTGATCITAAAGCTCAGGTTAGAAT
 651 CTTGTTTATAGGCTCTAGGTGTATATTGTGGGCTTCCCTGGCTCA
 701 GATGGTAAAGTGTCTGCCTGAATGTGGGTGATCTGGGTCATCCCTGG
 751 CTTGGGAAGATCCCTGGAGAAGGAAATGGCAACCCACTCTAGTACTCTT
 801 ACCTGGAAAATTCCATGGACAGAGGAGCCTTGTAAAGCTACAGTCCATGGG
 851 ATTGCAAAGAGTTAACACAACAGCAACTAAAGCACAGCACAGTACAGT
 901 ATACACCTGTGAGGTGAAGTGAAGTGAAGGTTCAATGCAGGGTCTCC
 951 ATTGCAGAAAGATTCTTACCATCTGAGCCACCAGGGAAAGCCAAAGAATA
 1001 CTGGAGTGGGTAGCCTATTCTTCTCCAGGGATCTTCCCATTCCAGGAA
 1051 TTGAACCTGGAGTCTCCTGCATTTCAGGTGGATTCTTCACCAAGCTGA
 1101 CCAGGTGGATACTACTCCATATTAAAGTGTAAAGTCCAGTTTCCA
 1151 CCTTCCCAAAAGGTTGGGTCACTCTTTAACCTCTGTGGCTACT
 1201 CTGAGGCTGTCTACAAGCTTATATTTATGAAACACATTATTGCAAGTT
 1251 GTTACTTTAGATTACAATGTGGTATCTGGCTATTAGTGGTATTGGTG
 1301 GTTGGGATGGGGAGGCTGATAGCATTCTCAGAGGGCAGCTAGATACTGTC
 1351 ATACACACTTTCAAGTTCTCCATTGGTGAATAGAAAGTCTCTGGAT
 1401 CTAAGTTATATGTGATTCTCAGTCTGTGGTCATATTCTATTCTACTCC
 1451 TGACCACTCAACAGAACCAAGATATCAAGGGACACTTGTGTTGTTCA
 1501 TGCCTGGGTGAGTGGGCCATGACATATGTTCTGGCCTTGTACATGGC
 1551 TGGATTGGTTGACAAGTGCAGCTGATCCTGGGACTGTGGCATGTGA
 1601 TGACATACACCCCTCTCACATTCTGCATGTCTCTAGGGGGAAAGGGGG
 1651 AAGCTCGGTATAGAACCTTATTGTATTCTGATTGCCTCACTTCTAT
 1701 ATTGCCCATGCCCTTGTTCCTCAAGTAACCAGAGACAGTGC
 1751 CCAGAACCAACCCCTACAAGAAACAAAGGGCTAAACAAAGCCAATGGAA
 1801 GCAGGATCATGGTTGAACCTTTCTGGCCAGAGAACAAACCTGCTATG
 1851 GACTAGATACTGGGAGAGGGAAAGGAAAGTGGGTGAATTATGGAAGGA
 1901 AGCTGGCAGGCTCAGCGTTCTGTCTGGCATGACCAGTCTCTCTTCA
 1951 CTCTCCTAGATGTAGGGCTGGTACCAAGAGCCCTGAGGCTTCTGC
 2001 GAATATAATATGAAACTGAGTGATGCTTCATTCTAGGTTCTTGGG
 2051 GCGCGAATTGAGCTCGTACCGGGGATCTCGAGAACGCTTAAACCATG
 2101 GAATGGAGCTGGTCTTCTCTCTGTCACTAACAGGTGTC
 2151 CTCCAGGTTCACTGAGCAGCTGACGCTGAGTTGGTGAACCTGGGG
 2201 CTTCACTGAAGATTCTGCAGGCTCTGGCTACACCTCACTGACCAT
 2251 GCAATTCACTGGGTGAAACAGAACCTGAACAGGGCTGGATGGATGG
 2301 ATATTTCTCCGGAAATGATGATTTAAATAACATGAGGGTTCAAGG
 2351 GCAAGGCCACACTGACTGCAGAACAAACCTCCAGCACTGCCTACGTG
 2401 CTCAACAGCCTGACATCTGAGGATTCTGCAGTGATTCTGTACAAGATC
 2451 CCTGAATATGCCACTGGGTCAAGGAACCTCACTGACCTGAGGCTC
 2501 GAGGGGAGGCAGCGGAGGCGGTGGCTCGGGAGGCGGGAGGCTCGG
 2551 GTGATGTCACAGTCTCCATCCTCCACCTGTGTCAGTTGGCGAGAAGG
 2601 TACTTGAGCTGCAAGTCAGTCAGGCTTTATATAGTGGTAATCAAA
 2651 AGAACTACTTGGCCTGGTACCAAGCAGAAACCAAGGGCAGTCTC
 2701 CTGATTTACTGGGATCCGCTAGGGAATCTGGGTCCTGATCGCTTCAC
 2751 AGGCACTGGGATCTGGGACAGATTCACTCTCCATCAGCAGTGTGAAGA
 2801 CTGAAGACCTGGCAGTTATTACTGTCAGCAGTATTAGCTATCCCCTC

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Figure 13b

2851 ACGTTCGGTGCTGGGACCAAGCTGGTCTGAAACGGGCCGCCGAGCCCAA
 2901 ATCTCCTGACAAAACCTCACACATGCCACCCTGCCAGCACCTGAACCTCC
 2951 TGGGGGGACCGTCAGTCTCCTCTCCCCCAAACCCAAGGGACACCCCTC
 3001 ATGATCTCCCGGACCCCTGAGGTACATGCGTGGTGGACGTGAGCCA
 3051 CGAAGACCTGAGGTCAAGTCAACTGGTACGTGGACGCCGTGGAGGTGC
 3101 ATAATGCCAAGACAAAGCCGCGGGAGGAGCAGTACAACAGCACGTACCGT
 3151 GTGGTCAGCGTCTCCTCACCGTCTGCACCGACTGGCTGAATGGCAAGGA
 3201 GTACAAGTGCAAGGTCTCCAACAAAGCCCTCCCAGCCCCCATCGAGAAAA
 3251 CCATCTCCAAAGCAAAGGGCAGCCCCGAGAACACACAGGTGTACACCTG
 3301 CCCCCATCCCGGGATGAGGTGACCAAGAACCGAGTCAGCCTGACCTGCCT
 3351 GGTCAAAGGCTCTATCCAGCGACATGCCGTGGAGTGGAGAGCAATG
 3401 GGCAGCCGGAGAACAACTACAAGACCAACGCCCTCCGTGCTGGACTCCGAC
 3451 GGCTCCTCTCCTCTACAGCAAGCTCACCGTGGACAAGAGCAGGTGGCA
 3501 GCAGGGGAACGTCTTCATGCTCCGTATGCATGAGGCTCTGCACAACC
 3551 ACTACACGCAGAAGAGCCTCTCCCTGTCTCCGGTAAAGGAGGCGGATCA
 3601 GGAGGTGGCGCACCTACTTCAAGTTCTACAAAGAAAACACAGCTACAAC
 3651 GGAGCATTACTGCTGGATTACAGATGATTTGAATGGAATTAATAATT
 3701 ACAAGAAATCCCAAACCTACCCAGGATGCTCACATTAACTTACATGCC
 3751 AAGAAGGCCACAGAACTGAAACATCTCAGTGTCTAGAAGAAGAACTCAA
 3801 ACCTCTGGAGGAAGTGTAAATTAGCTCAAAGAAAACTTCACTTAA
 3851 GACCCAGGGACTTAATCAGCAATATAACGTAATAGTTCTGGAACTAAAG
 3901 GGATCTGAAACACATTCAATGTGTGAATATGCTGATGAGACAGCAACCAT
 3951 TGTAGAATTCTGAACAGATGGATTACCTTGTCAAAGCATCATCTCAA
 4001 CACTAACTTGAAGCTTGTAAACATCGATAAAATAAAAGATTTATTAGT
 4051 CTCCAGAAAAAGGGGGGAATGAAAGACCCACCTGTAGGTTGGCAAGCT
 4101 AGCTTAAGTAACGCCATTGCAAGGCATGGAAAATACATAACTGAGAA
 4151 TAGAGAAGTTAGATCAAGGTCAAGGACAGATGGAACAGACTGAATATGGG
 4201 CCAAACAGGATATCTGTGTAAGCAGTCTCCTGCCCGGCTCAGGGCCAAG
 4251 AACAGATGGAACAGCTGAATATGGCCAACAGGATATCTGTGTAAGCA
 4301 GTTCCTGCCCGGCTCAGGGCAAGAACAGATGGTCCCCAGATGCGGTCC
 4351 AGCCCTCAGCAGTTCTAGAGAACCATCAGATGTTCCAGGGTCCCCCAA
 4401 GGACCTGAAATGACCTGTGCTTATTGAACTAACCAATCAGTTGCGCTT
 4451 CTCGCTTCTGTCGCGCCTCTGCTCCCCGAGCTCAATAAAAGAGGCCA
 4501 CAACCCCTCACTGGGGGCCAGTCCTCCGATTGACTGAGTCGCCCCGGGT
 4551 ACCCGTGTATCCAATAACCCCTTTGCAGTTGCATCCGACTTGTGGTCTC
 4601 GCTGTTCTGGAGGGTCTCCTCTGAGTGATTGACTACCCGTAGCGGG
 4651 GGTCTTCATT

1 - 2055 Bovine/human alpha-lactalbumin 5' flanking region
 2098 - 4011 cc49-IL2 coding region
 4068 - 4661 MoMuLV 3' LTR

Figure 14a
SEQ ID NO:11
Alpha-Lactalbumin YP Vector

1 GATCAGTCCTGGTGGTCATTGAAAGGACTGATGCTGAAGTTGAAGCTCC
 51 AATACTTGGCACCTGATGCGAAGAACTGACTCATGTGATAAGACCCCTG
 101 ATACTGGAAAGATTGAAGGCAGGAGGAGAAGGGATGACAGAGGATGGAA
 151 GAGTTGGATGGAATCACCAACTCGATGGACATGAGTTGAGCAAGCTTCC
 201 AGGAGTTGGAATGGGCAGGGAAGCCTGGCGTGCAGTCCATGGGGTT
 251 GCAAAGAGTTGGACACTACTGACTGACTGAAGTGAACGTAGTGTAAATC
 301 CATGGTACAGAAATATAGGATAAAAAGAGGAAGAGTTGGAAAGTCTTA
 351 AAGAGTTGAGGATATAAAAGTTAGAATACCTTAGTTGGAAAGTCTTA
 401 AATTATTTACTTAGGATGGTACCCACTGCAATATAAGAAATCAGGCTT
 451 AGAGACTGATGTAGAGAGAATGAGCCCTGGCATACCAGAACGTAACAGCT
 501 ATTGGTTATAGCTGTATAACCAATATATAACCAATATATTGGTTATATA
 551 GCATGAAGCTTGTGATGCCAGCAATTGAGGAACCATTTAGAAACTAGTATC
 601 CTAAACTCTACATGTTCCAGGACACTGATCTAAAGCTCAGGTTAGAAT
 651 CTTGGTTTATAGGCTCTAGGTGTATATTGTGGGCTTCCCTGGCTCA
 701 GATGGTAAAGTGTCTGCCTGCAATGTGGGTGATCTGGGTCATCCCTGG
 751 CTTGGGAAGATCCCCTGGAGAAGGAAATGGCAACCCACTCTAGTACTCTT
 801 ACCTGGAAAATTCCATGGACAGAGGAGCCTGTAAGCTACAGTCCATGGG
 851 ATTGCAAAGAGTTGAACACAACGTGAGCAACTAACGACAGCACAGTACAGT
 901 ATACACCTGTGAGGTGAAGTGAAGTGAAGGTTCAATGCAGGGTCTCCTGC
 951 ATTGCAGAAAGATTCTTACCATCTGAGCCACCAGGGAGCCCAAGAATA
 1001 CTGGAGTGGGTAGCCTATTCTCTCCAGGGATCTTCCCCTCCAGGAA
 1051 TTGAACCTGGAGTCTCCTGCATTTCAGGTGGATTCTCACAGCTGAACTA
 1101 CCAGGTGGATACTACTCCAATATTAAGTCTTAAAGTCCAGTTTCCA
 1151 CCTTCCCAAAAGGTTGGGTCACTCTTTTAACCTCTGTGGCTACT
 1201 CTGAGGCTGTACAAGCTTATATATTATGAACACATTATTGCAAGTT
 1251 GTTAGTTTAGATTACAATGTGGTATCTGGTATTTAGTGGTATTGGTG
 1301 GTTGGGATGGGAGGCTGATAGCATCTCAGAGGGCAGCTAGATACTGTC
 1351 ATACACACTTTCAAGTTCTCCATTGGTGAAGATAGAAAGTCTCTGGAT
 1401 CTAAGTTATATGTGATTCTCAGTCTGTGGTCAATTCTATTCTACTCC
 1451 TGACCACTCAACAAGGAACCAAGATACTAAGGGACACTTGTGTTGTTCA
 1501 TGCCTGGGTTGAGTGGGAGCATGACATATGTTCTGGCCTTGTACATGGC
 1551 TGGATTGGTGACAAGTGCAGCTGTCATGTCAGGACTGTGGCATGTGA
 1601 TGACATACACCCCTCTCCACATTCTGATGTCAGGGGGAGGGGG
 1651 AAGCTCGGTATAGAACCTTATTGTATTTCTGATTGCTCACTCTTAT
 1701 ATTGCCCTCATGCCCTTCTTGTCTCAAGTAACCAAGAGACAGTGCCTC
 1751 CCAGAACCAACCCCTACAAGAAACAAAGGGCTAAACAAAGCCAATGGGAA
 1801 GCAGGATCATGGTTGAACCTTTCTGGCCAGAGAACAAACCTGCTATG
 1851 GACTAGATACTGGGAGAGGGAAAGGAAAGTAGGGTGAATTATGGAAGGA
 1901 AGCTGGCAGGCTCAGCGTTCTGTCAGGATGACCAAGTCTCTCTTCAATT
 1951 CTCTCCTAGATGTAGGGCTGGTACCAAGAGCCCTGAGGCTTCTGCAT
 2001 GAATATAATATATGAAACTGAGTGTGATGCTCCATTTCAGGTCTTGGG
 2051 GCGCCGAATTGAGCTCGTACCCGGGGATCTGACGGATCCGATTACTT
 2101 ACTGGCAGGTGCTGGGGCTCCGAGACAATCGCAACATCTACACCAACA
 2151 CAACACCGCCTCGACCAGGGTGAGATATCGGCCGGGACGCCGGGGTGGT
 2201 AATTACAAGCGAGATCCGATTACTACTGGCAGGTGCTGGGGCTTCCGA
 2251 GACAATCGCAACATCTACACCACAAACACCCCTCGACCAGGGTGAGA
 2301 TATCGGCCGGGACGCCGGTGGTAAATTACAAGCGAGATCTCGAGTTAA
 2351 CAGATCTAGGCCTCTAGGTGACGGATCCCCGGGAATTGGCGCCGCCA
 2401 CCATGATGTCCTTGTCTCTGCTCTGGTAGGGCATCCTATTCCATGCC
 2451 ACCCAGGCCCAGGTCCAACCTGACAGCAGTCTGGCCTGAGCTGGTGAAGCC
 2501 TGGGACTTCAGTGAGGATATCCTGCAAGGCTTCTGGCTACACCTTCACAA
 2551 GCTACTATTTACACTGGGTGAAGCAGAGGCCTGGACAGGGACTTGAGTGG
 2601 ATTGCATGGATTATCCTGGAAATGTTATTACTACGTACAATGAGAAAGTT
 2651 CAAGGGCAAGGCCACACTGACTGACGACAAATCCTCCAGCACAGCCTAC
 2701 TGCACCTCAACAGCCTGACCTCTGAGGACTCTGCGGTCTATTCTGTGCA
 2751 AGGGGTGACCATGATCTGACTACTGGGGCAAGGCACCAACTCTCACAGT
 2801 CTCCTCAGCCAAAACGACACCCCCATCTGTCTATCCACTGGCCCTGGAT

Figure 14b

2851 CTGCTGCCAAACTAACTCCATGGTGACCTGGATGCCGGTCAAGGGC
2901 TATTCCCTGAGCCAGTGACAGTGACCTGGAACTCTGGATCCCTGTCCAG
2951 CGGTGTGCACACCTTCCAGCTGCTCGCAGTCAGCTGACCTCTACACTCTGA
3001 GCAGCTCAGTGAUTGTCCCCTCCAGCACCTGGCCCAGCGAGACCGTCACC
3051 TGCAACGTTGCCACCCGCCAGCAGCACCAAGGTGGACAAGAAAATTGT
3101 GCCCAGGGATTGTACTAGTGGAGGTGGAGGTAGCTAAGGGAGATCTCGAC
3151 GGATCCCCGGAAATTGCCCTCTCCCTCCCCCCCCCTAACGTTACTGG
3201 CGGAAGCCGCTTGAATAAGGCCGGTGTGCGTTGTCTATATGTTATT
3251 CCACCATATTGCCGTCTTTGGCAATGTGAGGGCCGGAAACCTGGCCCT
3301 GTCTCTTGACGAGCATTCCTAGGGCTTTCCCTCTGCCAAAGGAAT
3351 GCAAGGTCTGTGAATGTGCTGAAGGAAGCAGTCCTCTGGAAGCTTCTT
3401 GAAGACAAACACGTCTGTAGCGACCCCTTGCAAGGCAGCGAACCCCCCA
3451 CCTGGCGACAGGTGCCTCTGCGGCCAAAGCCACGTGTATAAGATACACC
3501 TGCAAAGGGCGACAACCCCAGTGCCACGTTGTGAGTTGGATAGTTGTGG
3551 AAAGAGTCAAATGGCTCCTCAAGCGTATTCAACAAGGGCTGAAGGAT
3601 GCCCAGAAGGTACCCATTGTATGGGATCTGATCTGGGCTCGGTGCAC
3651 ATGCTTACATGTGTTAGTCGAGGTTAAAAAACGTCAGGCCCCCGA
3701 ACCACGGGACGTGGTTCTTGAACACAGATGATAATATGCCCTC
3751 CTTTGTCTCTGCTCTGGTAGGCATCCTATTCCATGCCACCCAGGCCG
3801 ACATTGTGCTGACACAATCTCAGCAATCATGTCCTGCATCTCCAGGGAG
3851 AAGTCACCATGACCTGCAAGTGCACCTCAAGTGTAAAGTTACATACATG
3901 GTACCAAGCAGAAGTCAGGCCACCTCCCCAAAAGATGGATTATGACACAT
3951 CCAAACACTGGCTCTGGAGTCCCTGCTCGCTTCAGTGGCAGTGGGTCTGGG
4001 ACCTCTCACTCTCACACTCAGCAGCATGGAGGCTGAAGATGCTGCCAC
4051 TTATTACTGCCAGCAGTGGGGTAGTTACCTCACGTTGGTGGGGACCA
4101 AGCTGGAGCTGAAACGGGCTGATGCTGCACCAACTGTATCCATCTTCCA
4151 CCATCCAGTGAGCAGTTAACATCTGGAGGTGCCCTCAGTCGTGCTTCTT
4201 GAACAACTTCTACCCAAAGACATCAATGTCAAGTGGAAAGATTGATGGCA
4251 GTGAACGACAAAATGGCGCTCTGAACAGTTGGACTGATCAGGACAGCAA
4301 GACAGCACCTACAGCATGAGCAGCACCTCACGTTGACCAAGGACGAGTA
4351 TGAACGACATAACAGCTATACTGTGAGGCCACTCACAAGACATCAACTT
4401 CACCCATTGTCAAGAGCTCAACAGGAATGAGTGTAAATAGGGGAGATCT
4451 CGACATCGATAATCAACCTCTGGATTACAAAATTGTGAAGAGATTGACTG
4501 GTATTCTTAACATATGTTGCTCTTTACGCTATGTGGATAACGCTGCTTTA
4551 ATGCTTGTATCATGCTATTGCTTCCCGTATGCTTCTTCTCCTC
4601 CTTGTTATAATCCTGGTTGCTCTTTATGAGGAGTTGTGGCCCGTTG
4651 TCAGGCAACGTGGCTGGTGTGCACTGTGTTGCTGACGCAACCCCCACT
4701 GGTTGGGCATTGCCACACCTGTCAAGCTCCTTCCGGGACTTCGCTT
4751 CCCCCCTCCATTGCCACGGCGAACATCATGCCGCTGCTTGGCGCT
4801 GCTGGACAGGGCTCGGCTGTTGGCACTGACAATTCCGTGGTGTGCTG
4851 GGGAAATCATCGTCCTTCCTGGCTGCTGCCCTGTGTTGCCACCTGGAT
4901 TCTCGCGGGACGTCCTCTGCTACGTCCTTCCGGCCCTCAATCCAGCGG
4951 ACCTCCTTCCCGGGCTGCTGCCGCTCTGGCCCTTCCCGCTCT
5001 CGCTTCGCCCTCAGACGAGTCGGATCTCCCTTGGGCCCTCCCCGCC
5051 TGATCGATAAAATAAAAGATTATTAGTCTCCAGAAAAAGGGGGGAAT
5101 GAAAGACCCACCTGTAGGTTGGCAAGCTAGCTTAAGTAACGCCATT
5151 GCAAGGCATGGAAAATACATAACTGAGAATAGAGAAGTTAGATCAAGG
5201 TCAGGAACAGATGGAACAGCTGAATATGGGCAAACAGGATATCTGIGGT
5251 AAGCAGTTCTGCCCGGGCTCAGGGCCAAGAACAGATGGAACAGCTGAAT
5301 ATGGGCCAACAGGATATCTGTTAAGCAGTTCTGCCCGGGCTCAGGG
5351 CCAAGAACAGATGGTCCCAGATGCCGCTGCCAGCCTCAGCAGTTCTAGA
5401 GAACCACATCAGATGTTCCAGGTGCCCAAGGACCTGAAATGACCCCTGT
5451 CCTTATTGAACTAACCAATCAGTTGCTCTGCTTCTGTTGCGCGCT
5501 TCTGCTCCCCGAGCTCAATAAAAGAGGCCACAACCCCTCACTGGGGCGC
5551 CAGTCCTCCGATTGACTGAGTCGCCGGTACCGTGTATCCAATAACC
5601 CTCTTGCAAGTGCATCCGACTTGTGGTCTCGCTTGGGAGGGTCT

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Figure 14c

5651 CCTCTGAGTGATTGACTACCCGTAGCGGGGGCTTTCATT

1 - 2053	Bovine/Human Alpha-lactalbumin 5' flanking region
2093 - 2336	Double mutated PPE sequence
2403 - 2459	Bovine alpha-lactalbumin signal peptide coding region
2460 - 3137	Yersenia pestis heavy chain Fab gene coding region
3167 - 3742	EMCV IRES
3743 - 3799	Bovine alpha-lactalbumin signal peptide coding region
3800 - 4441	Yersenia pestis light chain Fab gene coding region
4461 - 5052	WPRE sequence
5098 - 5691	Moloney murine leukemia virus 3' LTR

Figure 15
SEQ ID NO:12
IRES-Casein Signal Peptide Sequence

1 GGAATTGCCCTCTCCCTCCCCCCCCCTAACGTTACTGCCGAAGCCG
51 CTTGAATAAGCCGGTGTGCGTTGTCTATATGTTATTTCACCATAT
101 TGCCGTCTTGGCAATGTGAGGGCCGGAAACCTGCCCTGTCTTCTG
151 ACGAGCATTCTAGGGTCTTCCCTCTGCCAAAGGAATGCAAGGTCT
201 GTTGAATGTCGTGAAGGAAGCAGTTCTCTGGAAGCTTCTGAAGACAAA
251 CAACGTCTGTAGCGACCTTGCAGGCAGCGGAACCCCCACCTGGCGAC
301 AGGTGCCTCTGCGGCCAAAGCCACGTGTATAAGATAACACTGCAAAGGC
351 GGCACAACCCCAGTGCCACGTTGAGTTGGATAGTTGTGAAAGAGTCA
401 AATGGCTCTCTCAAGCGTATTCAACAAGGGCTGAAGGATGCCAGAAG
451 GTACCCATTGTATGGGATCTGATCTGGGCTCGGTGCACATGCTTAC
501 ATGTGTTAGTCGAGGTTAAAAAAACGTCTAGGCCCGAACCACGGGG
551 ACGTGGTTTCTTGTGGCTGTTGCTTGGCGCCATGGGATATCTAGATC
601 TACCTGTCTTGTGGCTGTTGCTTGGCGCCATGGGATATCTAGATC
651 TCGAGCTCGCAGAGCTT

1 - 583

IRES

584 - 628

Modified bovine alpha-S1 casein signal peptide coding region

629 - 668

Multiple cloning site

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Figure 16a

SEQ ID NO: 13

LNBOTDC Vector

1 TTTGAAAGACCCACCGTAGGTGGCAAGCTAGCTTAAGTAACGCCACTT
51 TGCAAGGCATGAAAAATACATAACTGAGAATAGAAAAGTCAGATCAAG
101 GTCAGGAACAAAGAACAGCTGAATACCAAACAGGGATATCTGTGGTAAGC
151 GGTTCCCTGCCCGGCTCAGGGCCAAGAACAGATGAGACAGCTGAGTGTAG
201 GGCCAAACAGGATATCTGTGGTAAGCAGTCCCTGCCCGGCTCGGGCCA
251 AGAACAGATGGTCCCCAGATGCGGTCCAGCCCTCAGCAGTTCTAGTGAA
301 TCATCAGATGTTCCAGGGTCCCCAAGGACCTGAAAATGACCTGTACC
351 TTATTGAACTAACAACTCAGTCGCTTCTCGCTTCTGTCGCGCGCTTC
401 CGCTCTCCGAGCTCAATAAAAGAGCCACAACCCCTCACTCGCGGCCA
451 GTCTCCGATAGACTCGCTGCCGGTACCCGATTCCCAATAAAGCCT
501 CTTGCTGTTGCATCCGAATCGTGGTCTCGCTGTTCTGGGAGGGTCTC
551 CTCGACTGATTGACTACCCACGACGGGGTCTTCATTGGGGCTCGT
601 CCGGGATTGGAGACCCCTGCCAGGGACCACGGACCCACACCGGGAGG
651 TAAGCTGCCAGCAACTTATCTGTGTCTGCTAGCTAGTGTCTATG
701 TTTGATGTTATGCGCCTGCGTCTGTACTAGTTAGCTAACTAGCTCTGTAT
751 CTGGCGGACCCGTGGTGGAACTGACCGAGTTCTGAACACCCGGCCGCAACC
801 CTGGGAGACGCTCCAGGGACTTGGGGCGTTTGTGGCCCGACCTGA
851 GGAAGGGAGTCGATGTGGAACTCGACCCCGTCAGGATATGTGGTTCTGGT
901 AGGAGACGAGAACCTAAACAGTCCCGCCTCGCTCTGAATTGGCTTT
951 CGGTTGGAACCGAACCGCGCGTCTGTCTGCTGCAGCGCTGCAGCATC
1001 GTTCTGTGTTGCTCTGTGACTGTGTTCTGTATTGTCTGAAAATTA
1051 GGGCCAGACTGTTACCACTCCCTTAAGTTGACCTTAGGTCACTGGAAAG
1101 ATGTCGAGCGGATCGCTACAACCAGTCGGTAGATGTCAAGAAGAGACGT
1151 TGGGTTACCTCTGCTCTGAGAACCTTTAACGTGGATGGCC
1201 GCGAGACGGCACCTTAACCGAGACCTCATCACCCAGGTTAAGATCAAGG
1251 TCTTTCACCTGGCCCGATGGACACCCAGACCCAGGTCCCTACATCGTG
1301 ACCTGGGAAGCCTTGGCTTTGACCCCCCTCCCTGGGTCAAGGCCCTTGT
1351 ACACCTAACGCCCCCTCCATCGGCCCCGTCTCTCCCC
1401 TTGAACCTCTCGTCCGACCCCGCTCGATCCTCCCTTATCCAGGCC
1451 ACTCCTCTCTAGCGCATGATTGAAAGATGGATTGACCGAGGTTCTCCGGCC
1501 GATCGTTCGCATGATTGAAAGATGGATTGACCGAGGTTCTCCGGCC
1551 GCTGGGTGGAGAGGCTATTGGCTATGACTGGGACAACAGACAATCGG
1601 CTGCTCTGATGCCCGTGTCCGGCTGTCAAGCCAGGGCGCCGGTT
1651 TTTTGTCAAGACCGACCTGTCCGGTGCCTGAATGAACTGCAGGACGAG
1701 GCAGCGGGCTATGTGGCTGGCACAGCGGGCTTCCTGCGCAGCTGT
1751 GCTCGACGTTGCACTGAAGCGGAAGGGACTGGCTGCTATTGGCGAAG
1801 TGCGGGGAGGATCTCCTGTCACTCACCTGCTCTGCGAGAAAGTA
1851 TCCATCATGGCTGATGCAATGGCGGGCTGCATACGTTGATCCGGCTAC
1901 CTGCCCATCGACCACCAAGCGAAACATCGCATCGAGCGAGCACGTACTC
1951 GGATGGAAGCCGGTCTTGTGATCAGGATGATCTGGACGAAGAGCATCAG
2001 GGGCTCGCCAGCGAACGTTGCGCCAGGCTCAAGCGCGCATGCCGA
2051 CGCGAGGATCTCGTGTACCCATGGCGATGCCTGCTGCCGAATATCA
2101 TGGTGGAAATGGCGCTTTCTGGATTGATCGACTGTGGCCGGCTGGGT
2151 GTGGCGGACCGCTATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGA
2201 AGAGCTTGGCGCGAATGGCTGACCGCTTCTCGTGCTTACGGTATCG
2251 CGCGCTCCGATTGCGAGCGCATGCCCTCTATGCCCTCTGACGAGTT
2301 TTCTGAGCGGGACTCTGGGGTCTGAAATGACCGACCAAGCGACGCCAAC
2351 CTGCCATCACGAGATTGCGATTCCACCGCCCTCTATGAAAGGGTGGG
2401 CTTCGGAATCGTTCCGGGACGCCGGCTGGATGATCCTCAGCGCGGG
2451 ATCTCATGCTGGAGTTCTCGCCCACCCGGGCTCGATCCCCCTCGCGAGT
2501 TGGTCAGCTGCTGCCCTGAGGCTGGACGACCTCGCGGAGTTCTACCGGCA
2551 GTGCAAATCCGTCGGCATCCAGGAAACCGAGCAGCGGCTATCCGCGCATCC
2601 ATGCCCGGAACGTCAGGAGTGGGGAGGCACGATGGCGCTTGGTCGAG
2651 GCGGATCCGGCATTAGCCATATTATTCATTGGTTATATAGCATAAAATCA
2701 ATATTGGCTATTGGCCATTGCAACGTTGATCCATATCATAATATGTAC
2751 ATTTATATTGGCTCATGTCCAACATTACGCCATTGACATTGATTATT

Figure 16b

2801 GACTAGTTATTAATAGTAATCAATTACGGGTCAATTAGTTCATAGCCCAT
 2851 ATATGGAGTTCGCGTTACATAACTACGGTAATGGCCCGCTGGCTGA
 2901 CCGCCCAACGACCCCCCGCCCATTGACGTCAATAATGACGTATGTTCCCAT
 2951 AGTAACGCCAATAGGGACTTCCATTGACGTCAATGGGTGGAGTATTAC
 3001 GGTAAACTGCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACG
 3051 CCCCCTATTGACGTCAATGACGGTAATGGCCCGCCTGGCATTATGCCA
 3101 GTACATGACCTTATGGGACTTCCATTGGCAGTACATCTACGTATTAG
 3151 TCATCGCTATTACCATGGTGATGCGGTTTGGCAGTACATCAATGGCGT
 3201 GGATAGCGGTTGACTCACGGGATTCCAAGTCTCCACCCATTGACGT
 3251 CAATGGGAGTTGTTGGCACCAAAATCAACGGGACTTCCAAAATGTC
 3301 GTAACAACCTCCGCCCCATTGACGCAAATGGCGGTAGGCATGTACGGTGG
 3351 GAGGTCTATATAAGCAGAGCTCGTTAGTGAACCGTCAGATGCCCTGGAG
 3401 ACGCCATCCACGCTGTTTGACCTCCATAGAAGACACCGGGACCGATCCA
 3451 GCCTCCGCGGCCCAAGCTCTGACGGATCCCAGGGAAATCAGGCCATC
 3501 GATCCCAGCCGCCCCATGGAAATGGAGCTGGGTCTTCTCTTCTGTGTC
 3551 AGTAACACTACGGTGTCCACTCCGACATCCAGATGACCCAGTCTCCAGCCT
 3601 CCCTATCTGCATCTGGGAGAAAATGTCACTATCACATGTCGAGCAAGT
 3651 GGGATATTACAATTATTAGCATGGTATCAGCAGAAACAGGGAAAATC
 3701 TCCTCAGCTCCTGGTCTATAATGCAAAACCTTAGCAGATGGTGTGCCAT
 3751 CAAGGTTCACTGGCAGTGGATCAGGAACACAATATTCTCTCAAGATCAAC
 3801 AGCCTGCAGCCTGAAGATTGGGAGTTTACTGTCAACATTGGAG
 3851 TACTCCGTGGACGTTGGTGGAGGCACCAAGCTGGAAATCAAACGGCTG
 3901 ATGCTGCACCAACTGTATCCATCTTCCCACCATCCAGTGAGCAGTTAAC
 3951 TCTGGAGGTGCCTCAGTCGTGTGCTTGAACAACTCTACCCCAAAGA
 4001 CATCAATGTCAAGTGGAAAGATTGATGGCAGTGAACGACAAAATGGCGTCC
 4051 TGAACAGTTGGACTGATCAGGACAGCAAAGACAGCACCTACAGCATGAGC
 4101 AGCACCCCTCACATTGACCAAGGACGAGTATGAACGACATAACAGCTATAC
 4151 CTGTGAGGCCACTCACAAGACATCAACCTCACCCATTGTCAAGAGCTTCA
 4201 ACAGGAATGAGTGTGAAAGCATCGATTCCCTGAATTGGCCCTCTCC
 4251 CTCCCCCCCCCTAACGTTACTGGCCGAAGCCGTTGGAATAAGGCCGGT
 4301 GTGCGTTGTCTATATGTTATTTCCACCATATTGCCGTCTTGGCAAT
 4351 GTGAGGGCCCGAAACCTGGCCCTGCTTCTTGACGAGCATTCTAGGGG
 4401 TCTTCCCTCTGCCAAAGGAATGCAAGGTCTGTGAATGTCGTGAAGG
 4451 AAGCAGTTCCTCTGGAAAGCTTCTTGAAGACAAACAACGTCGTAGCGACC
 4501 CTTTGCAAGGAGCGGAAACCCCCCACCTGGCGACAGGTGCCCTGCGGCCA
 4551 AAAGGCCACGTGATAAGATAACACCTGCAAAAGGGCGACAACCCCCAGTGC
 4601 ACGTTGTGAGTTGGAGTGTGAAAGAGTCAATGGCTCTCCTCAAGC
 4651 GTATTCAACAAGGGGCTGAAGGATGCCAGAAGGTACCCATTGTATGGG
 4701 ATCTGATCTGGGCTCGGTGACATGCTTACATGTTAGTCGAGGTT
 4751 TAAAAAAACGTCAGGCCCCCGAACACGGGACGTGGTTTCTTGA
 4801 AAAACACGATGATAATATGGCCTCCTTGTCTCTGCTCTGGTAGGCA
 4851 TCCTATTCCATGCCACCCAGGCCAGGTTCACTTCAGCAGTCTGGGCA
 4901 GAGCTTGTGAAGCCAGGGCCCTAGTCAGTTGTCTGCACAGCTCTGG
 4951 CTTCAACATTAAGACACCTTATGCACTGGGTAAGCAGAGGCCTGAAC
 5001 AGGGCCTGGAGTGGATTGAAAGGATTGATCCTGCAATGGGAATACTGAA
 5051 TATGACCGAAGTTCCAGGGCAAGGCCACTATAACAGCAGACACATCCTC
 5101 CAACACAGTCACCTGCAGTCAGCAGCCTGACATCTGAGGACACTGCCG
 5151 TCTATTACTGTGCTAGTGGAGGGAACTGGGTTTCTTACTGGGCCAA
 5201 GGGACTCTGGTCACTGTCTGCAACCCAAAACGACACCCCCATCTGTCTA
 5251 TCCACTGGCCCTGGATCTGCTGCCAAACTAACTCCATGGTACCCCTGG
 5301 GATGCCCTGGTCAAGGGCTATTCCTGAGCCAGTGAACAGTGACCTGGAAAC
 5351 TCTGGATCCCTGTCAGCGGTGTCACACCTTCCAGCTGCTCTGCAGTC
 5401 TGACCTCTACACTCTGAGCAGCTCAGTGACTGTCCCCTCCAGCACCTGGC
 5451 CCAGCGAGACCGTCACCTGCAACGTTGCCACCCGGCCAGCAGCACCAAG
 5501 GTGGACAAGAAAATTGTGCCAGGGATTGACTAGTGGAGGTGGAGGTAG
 5551 CCACCATCACCACCATTAATCTAGGTTAAGCAGGCGCTGGAGATCTA
 5601 GGCCTCCTAGGTGACATCGATAAAAAGATTTATTAGTCTCCAG
 5651 AAAAAGGGGGAAATGAAAGACCCCACCTGAGGTTGGCAAGCTAGCTTA
 5701 AGTAACGCCATTGCAAGGCATGGAAAAATACATAACTGAGAATAGAGA
 5751 AGTTCAAGATCAAGGTCAAGGAAACAGATGGAACAGCTGAATATGGGCCAAAC
 5801 AGGATATCTGTGGTAAGCAGTTCTGCCCGGCTCAGGGCCAAGAACAGA
 5851 TGGAACAGCTGAATATGGGCCAAACAGGATATCTGTGGTAAGCAGTTCT

Figure 16c

5901 GCCCCGGCTCAGGGCCAAGAACAGATGGTCCCCAGATGCCGTCCAGCCCT
5951 CAGCAGTTCTAGAGAACATCAGATGTTCCAGGGTCCCCAAGGACCT
6001 GAAATGACCGCTGTGCCTTATTGAACTAACCAATCAGTCGCTTCTCGCT
6051 TCTGTTCGCGCGCTTCTGCTCCCCGAGCTCAATAAAAGAGCCCACAACCC
6101 CTCACTCGGGCGCCAGTCCTCCGATTGACTGAGTCGCCCGGTACCCGT
6151 GTATCCAATAAACCTCTGCAGTTGCATCCGACTTGTGGTCTCGCTGTT
6201 CCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAAGCGGGGTCTT
TCATT

Moloney Murine Sarcoma Virus 5' LTR	1 - 589
Moloney Murine Leukemia Virus Extended Packaging Region	659 - 1468
Neomycin Resistance Gene	1512 - 2306
CMV Promoter	2656 - 3473
cc49 Signal Peptide Coding Region	3516 - 3572
Bot Fab 5 Light Chain	3573 - 4217
EMCV IRES (Clonetech)	4235 - 4816
Modified Bovine α -LA Signal Peptide Coding Region	4817 - 4873
Bot Fab 5 Heavy Chain	4874 - 5572
Moloney Murine Leukemia Virus 3' LTR	5662 - 6255

Figure 17a
SEQ ID NO: 34
LNBOTDC Vector

1 GAATTAAATTACATACCAAGATCACCGAAAATGTCTCCAAATGTGTCCCCC
51 TCACACTCCCAAATTGCGGGCTTCTGCCTCTTAGACCACTCTACCCCTAT
101 TCCCCACACTCACCGGAGCCAAAGCCGCGGCCCTTCCGTTCTTGCTTT
151 TGAAAGACCCCACCCGTAGGTGGCAAGCTAGCTAAGTAACGCCACTTTG
201 CAAGGCATGGAAAAATACATAACTGAGAATAGAAAAGTTAGATCAAGGT
251 CAGGAACAAAGAAAACAGCTGAATACCAACAGGATATCTGTGGTAAGCGG
301 TTCCCGCCCGGCTCAGGGCCAAGAACAGATGAGACAGCTGAGTGTAGGG
351 CCAAACAGGATATCTGTGGTAAGCAGTCCTGCCCGGCTCGGGGCCAAG
401 AACAGATGGTCCCCAGATGCGGTCCAGCCCTCAGCAGTTCTAGTGAATC
451 ATCAGATGTTCCAGGGTGCCTCAAGGACCTGAAAATGACCTGTACCTT
501 ATTTGAACTAACCAATCAGTCGCTCTCGCTCTGTCGCGCGCTCCG
551 CTCTCGAGCTCAATAAAAGAGCCCACAACCCCTCACTCGCGCGCCAGT
601 CTTCCGATAGACTGCGTCGCCGGTACCCGTATTCCAATAAGCCTCT
651 TGCTGTTGCATCCGAATCGTGGTCTCGCTGTTCTGGGAGGGTCTCCT
701 CTGAGTGATTGACTACCCACGACGGGGTCTTCATTGGGGGCTCGTCC
751 GGGATTGGAGACCCCTGCCAGGGACCACCGACCCACCACCGGGAGGTA
801 AGCTGGCCAGCAACTTATCTGTGTCTGCGATTGTCTAGTGTCTATGTT
851 TGATGTTATGCCCTCGCTGTACTAGTTAGCTAACTAGCTCTGTATCT
901 GGCAGACCCGTGGTGGAACTGACGAGTTCTGAACACCCGGCGCAACCT
951 GGGAGACGTCCCAGGGACTTGGGGGCCGTTTGTGGCCGACCTGAGG
1001 AAGGGAGTCGATGTGGAAATCCGACCCCGTCAGGATATGTGTTCTGGTAG
1051 GAGACGAGAACCTAAACAGTTCCCGCCTCCGCTCTGAATTGGTTCTCG
1101 GTTTGGAACCGAAGCCGCGCTTGTCTGCTGAGCGCTGCAGCATCGT
1151 TCTGTTGTCTCTGACTGTGTTCTGTATTGTGAAATTAGG
1201 GCCAGACTGTTACCTCCCTTAAGTTGACCTTAGGTCACTGGAAAGAT
1251 GTCGAGGGATCGCTCACAAACAGTCGGTAGATGTCAGAAGAGACGTTG
1301 GGTACCTCTGCTCTGAGAATGGCAACCTTAAACGTGGATGGCCGC
1351 GAGACGGCACCTTAACCGAGACCTCATCACCAGGTTAAGATCAAGGTC
1401 TTTTACCTGGCCGCATGGACACCCAGACAGGTCCTACATCGTGAC
1451 CTGGGAAGCCTGGCTTTGACCCCCCTCCCTGGTCAGGCCCTTGAC
1501 ACCCTAACGCTCCGCCTCCCTCCATCCGGCCGCTCTCCCCCTT
1551 GAACCTCTCGTCGACCCCGCCTCGATCCTCCCTTATCAGCCCTCAC
1601 TCCTCTCTAGGCGCCGGAATTCCGATCTGATCAAGAGACAGGATGAGGG
1651 AGCTTGTATATCCATTTCGGATCTGATCAGCACGTGTTGACAATTAAATC
1701 ATCGGCATAGTATATCGGCATAGTATAATACGACAAGGTGAGGAACCTAA
1751 CCATGGCCAAGCCTTGTCTCAAGAAGAACCTCATGAAAGAGCA
1801 ACGGCTAACATCACAGCATCCCCATCTCTGAAGACTACAGCGTCGCCAG
1851 CGCAGCTCTCTAGCGACGGCCGCATCTCACTGGTGTCAATGTATATC
1901 ATTTTACTGGGGACCTTGTGCAGAACACTCGTGGTGTGGCACTGCTGCT
1951 GCTGCGCAGCTGGCAACCTGACTTGTATCGTCGCGATCGAAATGAGAA
2001 CAGGGGCATCTGAGCCCTCGCGACGGTGTGACAGGTGCTCTCGATC
2051 TGCATCCTGGGATCAAAGCCGATAGTGAAGGGACAGTGTGGACAGCCGACG
2101 GCAGTTGGGATTCGTGAATTGCTGCCCTCTGGTATGTGTTGGGAGGGCTA
2151 AGCAGTCGTCGGCCGAGGAGCAGGACTGACACGTGCTACGAGATTTCGAT
2201 TCCACCGCCGCCTCTATGAAAGGTTGGGCTTCCGAATCTCATGCTGGAGTTCTCG
2251 CGCCGGCTGGATGATCCTCCAGCGCGGGGATCTCATGCTGGAGTTCTCG
2301 CCCACCCCAACTTGTATTGCAAGCTATAATGGTACAATAAAAGCAAT
2351 AGCATCACAAATTTCACAATAAAAGCATTTTCACTGCATTCTAGTTG
2401 TGGTTTGTCCAAACTCATCAATGTATCTTATCATGTCGACGAGTTGGT
2451 TCAGCTGTCGCTGAGGCTGGACGACCTCGCGGAGTTCTACCGGCAGTGC
2501 AAATCCGTCGGCATCCAGGAAACCAGCAGCGGCTATCCGCGCATCCATGC
2551 CCCCCGAACGTGCAAGGAGTGGGGAGGCACGATGGCCGCTTGGTCGAGGGCG
2601 ATCCGGCCATTAGCCATATTATTCAATTGTTATATAGCATAAAATCAATAT
2651 TGGCTATTGGCCATTGCATACGGTGTATCCATATCATAATATGTACATT
2701 ATATTGGCTCATGTCCAACATTACCGCCATGTTGACATTGATTATTGACT
2751 AGTTATTAAATAGTAATCAATTACGGGGCATTAGTTCATAGCCCATAAT
2801 GGAGTTCCGCGTTACATAACTACGGTAAATGGCCGCCCTGGCTGACCGC
2851 CCAACGACCCCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTA

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Figure 17b

2901 ACGCCAATAGGGACTTCATTGACGTCAATGGGTGGAGTATTTACGGTA
 2951 AACTGCCCACCTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCC
 3001 CTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCAGTAC
 3051 ATGACCTTATGGGACTTCCTACTTGGCAGTACATCTACGTATTAGTCAT
 3101 CGCTATTACCATGGTATCGCGGTTTGGCAGTACATCAATGGCGTGAT
 3151 AGCGGTTGACTCACGGGATTCCAAGTCTCACCCATTGACGTCAAT
 3201 GGGAGTTGTTGGCACAAAATCAACGGGACTTCCAAAATGTCGTA
 3251 CAACTCCGCCCATGACGCAAATGGCGGTAGGCATGTACGGTGGGAGG
 3301 TCTATATAAGCAGAGCTCGTTAGTGAACCGTCAGATCGCCTGGAGACGC
 3351 CATCCACGCTGTTGACCTCCATAGAACAGACCCGGGACCGATCCAGCCT
 3401 CCGCGGCCCAAGCTCTCGAGTTAACAGATCTAGGCTGGCACGACAGGT
 3451 TTCCCGACTGGAAAGCGGGCAGTGAGCGCAACGCAATTAAATGTGAGTTAG
 3501 CTCACTCATTAAGGCACCCCAGGTTACACTTATGCTTCGGCTCGTAT
 3551 GTTGTGTGGAATTGTGAGCGGATAACAAATTACACAGGAAACAGCTATG
 3601 ACCATGATTACGCCAAGCTGGCTGCAGGTCACGGATCCACTAGTAACG
 3651 GCCCGCAGTGTGCTGGAATTACCATGGGGCAACCCGGGACCGCAGCGC
 3701 CTTCTGCTGGCACCAATGGAAGCCATGCGCCGGACCACGACGTACGC
 3751 AGCAAAAGGGACGGGTGCGGTGGCATGGCATCGTCATGTCTCTC
 3801 ATCGTCCTGGCCATCGTGTGTTGGCAATGTGCTGGCATCACAGCCATTG
 3851 CAAGTTGAGCGTCTGCAGACGGTCACCAACTACTTCATCACAAAGCTTGG
 3901 CCTGTGCTGATCTGGTATGGGCTAGCAGTGGTGCCTTGGGGCGGCC
 3951 CATATTCTCATGAAAATGTGGACTTGTGCAACTTCTGGTGCAGTTCTG
 4001 GACTTCATTGATGTGCTGCGTCAGGCATCGATTGAGACCCCTGTGCG
 4051 TGATCGCAGTCGACCGCTACTTGCCTTACTAGTCCTTCAGTACAG
 4101 AGCCTGCTGACCAAGATAAGGCCGGGTGATCATTCTGATGGTGTGGAT
 4151 TGTGTCAGGCCTTACCTCCTTGTGCCATTAGCAGTCAGTGGTACAGGG
 4201 CCACCCACCGGAAGCCATCAACTGCTATGCCAATGAGACCTGCTGTGAC
 4251 TTCTTCACGAACCAAGCCTATGCCATTGCCTCTCCATCGTCCTCTA
 4301 CGTTCCCTGGTATCATGGTCTTCGTACTCCAGGGTCTTCAGGAGG
 4351 CCAAAAGGCAGCTCCAGAAGATTGACAAATCTGAGGGCCGCTCCATGTC
 4401 CAGAACCTTAGCCAGGTGGAGCAGGATGGCGGACGGGATGGACTCCG
 4451 CAGATCTTCAAGTTCTGCTGAAAGGAGCACAAGCCCTAAGACGTAG
 4501 GCATCATCATGGGACTTTCACCCCTGCTGGCTGCCCTTCTCATCGTT
 4551 AACATTGTGCACTGTGATCCAGGATAACCTCATCGTAAGGAAGTTACAT
 4601 CCTCTTAAATTGGATAGGCTATGTCATTCTGGTTCAATCCCCCTTATCT
 4651 ACTGGCGGAGGCCAGATTTCAGGATTGCCTTCCAGGAGCTCTGTGCGCTG
 4701 CGCAGGTCTTCTTGAAGGCCTATGCAATGGCTACTCCAGCAACGGCAA
 4751 CACAGGGGAGCAGAGTGGATATCACGTGAAACAGGAGAAAGAAAATAAAC
 4801 TGCTGTGTGAAGACCTCCAGGCACCGAAGACTTGTGGGGCATCAAGGT
 4851 ACTGTGCTAGCGATAACATTGATTACAAGGGAGGAATTGTAGTACAAA
 4901 TGACTCACTGCTCTCGAGAATCGAGGGCGGCACCCATCATCACCACG
 4951 TCGACCCCGGGACTACAAGGATGACGATGACAAGTAAGCTTATCCATC
 5001 ACACTGGCGGCCGCTCGAGCATGCATCTAGCGGGCTCGAGGCCGCAA
 5051 GGCGGATCCCCGGGAATTGCCCTCTCCCTCCCCCCCCCTAACGTTA
 5101 CTGGCGAAGCCGTTGGATAAGGCCGCTGTGCGTTGTCTATATGTTA
 5151 TTTTCCACCATATTGCCGTCTTGGCAATGTGAGGGCCGGAAACCTGG
 5201 CCCTGTCTTGTGACGAGCATTCTAGGGTCTTCCCTCTGCCAAAG
 5251 GAATGCAAGGTGTTGAATGTCGTGAAGGAAGCAGTCCCTCTGGAAAGCT
 5301 TCTTGAAGACAAACAACGCTCTGTAGCGACCCCTTGCAGGCAGCGGAACCC
 5351 CCCACCTGGCGACAGGTGCCTCTGCGGCCAAAGCCACGTGTATAAGATA
 5401 CACCTGCAAAGCGGCACAACCCAGTGCACGTTGTGAGTTGGATAAGTT
 5451 GTGGAAGAGTCAAATGGCTCCCTCAAGCGTATTCAACAAGGGCTGAA
 5501 GGATGCCAGAAGGTACCCATTGTATGGGATCTGATCTGGGGCCTCGGT
 5551 GCACATGCTTACATGTGTTAGTCGAGGTTAAAAAAACGTCAGGCC
 5601 CCGAACCAAGGGGACGTGGTTCTTGGTAAACACGATGATAATATGG
 5651 CCTCCTTGTCTCTGCTCTGGTAGGCATCCATTCCATGCCACCCAG
 5701 GCCGAGCTCACCCAGTCTCAGACTCCCTGGCTGTGCTCTGGCGAGAG
 5751 GCCCACCATCAACTGCAAGTCCAGCCAGAGTGTGTTGTACAGCTCAACA
 5801 ATAAGAACTATTAGCTGGTATCAGCAGAAACAGGACAGCCTCTAAG
 5851 CTGCTCATTACTGGCATTACCCGGGAATCCGGGTCCCTGACCGATT
 5901 CAGTGGCAGCGGGTCTGGGACAGATTCACTCACCACGAGCCTGC
 5951 AGGCTGAAGATGTGGCAGTTATTACTGTCAGCAATTATAGTACTCAG

Figure 17c

6001 ACGTTCGGCAAGGGACCAAGGTGAAATCAAACGAACGTGGCTGCACC
 6051 ATCTGTCTTCATCTTCCCCTGCATCTGATGAGCAGTTGAAATCTGGAACTG
 6101 CCTCTGTTGTGCGCTGCTGAATAACTCTATCCCAGAGAGGCCAAAGTA
 6151 CAGTGGAAAGGTGGATAACGCCCTCCAATCGGTAACTCCCAGGAGAGTGT
 6201 CACAGAGCAGGACAGCAAGGACAGCACCTACAGCCTCAGCAGCACCTGA
 6251 CGCTGAGCAAAGCAGACTACGAGAAACACAAACTCTACGCCTCGGAAGTC
 6301 ACCCATCAGGGCCTGAGATCGCCCGTCACAAAGAGCTCAACAAGGGGAG
 6351 AGTGTAGTTCTAGATAATTAAATTAGGAGGAGATCTCGAGCTCGCAAAG
 6401 CTTGGCACTGGCGTCGTTTACAACGTCGTGACTGGAAAACCCTGGCG
 6451 TTACCCAACCTAATCGCCTGCGACATCCCCCTTCGCCAGCCTCCA
 6501 GGTGACATCGATAAAATAAAAGATTATTTAGTCTCCAGAAAAAGGGG
 6551 GGAATGAAAGACCCCACCTGTAGGTTGGCAAGCTAGCTTAAGTAACGCC
 6601 ATTTGCAAGGCATGGAAAAATACATAACTGAGAATAGAGAAGTTCAAGAT
 6651 CAAGGTAGGAACAGATGGAACAGACTGAATATGGGCCAACAGGATATCT
 6701 GTGGTAAGCAGTCCCTGCCCGCTCAGGGCCAAGAACAGATGGAACAGC
 6751 TGAATATGGGCCAAACAGGATATCTGTTGTAAGCAGTTCCCTGCCCGCT
 6801 CAGGGCCAAGAACAGATGGTCCCCAGATGCGGTCCAGCCCTCAGCAGTT
 6851 CTAGAGAACCATCAGATGTTCCAGGGTCCCCAACAGGACCTGAAATGACC
 6901 CTGTCCTTATTGAACTAACCAATCAGTCGCTCTCGCTCTGTTCGC
 6951 GCGCTCTGCTCCCGAGCTCAATAAAAGAGGCCAACACCCCTCACTCGG
 7001 GGCAGCAGTCCTCGATTGACTGAGTCGCCGGGTACCCGTGTATCCAAT
 7051 AAACCCCTCTGCAAGTTCGATCCGACTGTGGTCTCGCTGTTCTGGAG
 7101 GGTCTCCTCTGAGTGATTGACTACCCGTCAAGCGGGGTCTTCATTGGG
 7151 GGCTCGTCCGGGATCGGGAGACCCCTGCCAGGGACCACCGACCCACAC
 7201 CGGGAGGTAAGCTGGCTGCTCGCGCTTCGGTGTGACGGTGAAACACC
 7251 TCTGACACATGCAAGCTCCCGAGACGGTACAGCTGTGTGAAAGCGGAT
 7301 GCGGGGAGCAGACAAGCCCGTCAGGGCGCGTCAGCGGGTGTGGCGGGTG
 7351 TCGGGGCGCAGCCATGACCGAGTCACGTAGCGATAGCGGAGTGTATACTG
 7401 GCTTAACTATGCGGCATCAGACAGATTGACTGAGAGTGCACCATATGC
 7451 GGTGTGAAATACCGCACAGATGCGTAAGGAGAAAATACCGCATCAGGCG
 7501 TCTTCGCTTCCTCGCTCACTGACTCGCTGCGCTCGGTGTTGGCTGCG
 7551 GCGAGCGGTATCAGCTCAAAAGGCGTAATACGGTTATCCACAGAAT
 7601 CAGGGGATAACGCAGGAAAGAACATGTGAGCAAAAGGCCAGCAAAGGCC
 7651 AGGAACCGTAAAAGGCCCGTTGCTGGCGTTTCCATAGGCTCCGCC
 7701 CCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAAACC
 7751 CGACAGGACTATAAAAGATACCAAGGCGTTCCCCCTGGAAAGCTCCCTCG
 7801 CGCTCTCGTTCCGACCCCTGCCGCTACCGGATACCTGTCGCCCTTCT
 7851 CCCTCGGGAAAGCTGGCGTTCTCATAGCTCACGCTGTAGGTATCTCA
 7901 GTTGGTGTAGTCGTTCCCAAGCTGGGCTGTGCAAGGAACCCCCCCC
 7951 GTTCAGCCGACCGCTGCCCTATCCGTAACTATCGTCTTGAGTCAA
 8001 CCCGGTAAGACACGACTTATGCCACTGGCAGCAGCCACTGGTAACAGGA
 8051 TTAGCAGAGCGAGGTATGTAAGCGGGTGTACAGAGTTCTGAAAGTGG
 8101 CCTAACTACGGCTACACTAGAAGGACAGTATTGGTATCTGCGCTCTGCT
 8151 GAAGCCAGTTACCTCGGAAAAGAGTTGGTAGCTTGTGATCCGGCAAAC
 8201 AAACCCACCGCTGGTAGCGGGTTTTGTTGCAAGCAGCAGATTACG
 8251 CGCAGAAAAAAAGGATCTCAAGAAGATCCTTGATCTTCTACGGGTC
 8301 TGACGCTCAGTGGAACGAAAATCACGTTAAGGGATTGTCATGAGAT
 8351 TATCAAAAAGGATCTCACCTAGATCCTTTAAATTAAAAATGAAGTTT
 8401 AAATCAATCTAAAGTATATGAGTAAACTGGTCTGACAGTTACCAATG
 8451 CTTAACATCAGTGAGGCACCTATCTCAGCGATCTGCTATTGTTCATCCA
 8501 TAGTTGCCTGACTCCCGTCGTGTTAGATAACTACGATAACGGGAGGGCTTA
 8551 CCATCTGGCCCCAGTGTGCAATGATACCGCGAGACCCACGCTCACCGC
 8601 TCCAGATTATCAGCAATAACCCAGCAGCCGGAAAGGGCCAGCGCAGAA
 8651 GTGGTCTGCAACTTATCCGCTCCATCCAGTCTATTAAATTGTTGCCGG
 8701 GAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTGCCAACGTTGTC
 8751 CATTGCTGCAAGGCATCGTGGTGTACGCTCGTGTGTTGGTATGGCTTCAT
 8801 TCAGCTCCGGTCCCAACGATCAAGGGAGTTACATGATCCCCCATGTTG
 8851 TGCAAAAAAGCGGTTAGCTCCTCGGTCTCCGATCGTTGTCAGAAGTAA
 8901 GTTGGCCGCAGTGTATCACTCATGGTTATGGCAGCACTGCATAATTCTC
 8951 TTACTGTCATGCCATCCGTAAGATGCTTTCTGACTGGTGAGTACTCA
 9001 ACCAAGTCATTGAGAATAGTGTATGCCGACCGAGTTGCTCTGCC
 9051 GGCAGTCAACACGGGATAATACCGGCCACATAGCAGAACTTAAAGTGC

Figure 17d

9101 TCATCATTGGAAAACGTTCTCGGGCGAAAACCTCAAGGATCTTACCG
9151 CTGTTGAGATCCAGTTGATGTAACCCACTCGTGCACCCAACTGATCTTC
9201 AGCATCTTTACTTCACCAGCGTTCTGGGTGAGCAAAAACAGGAAGGC
9251 AAAATGCCGAAAAAGGAATAAGGGCGACACGGAAATGTTGAATACTC
9301 ATACTCTTCCTTTCAATATTATTGAAGCATTATCAGGGTTATTGTCT
9351 CATGAGCGGATACATATTGAATGTATTAGAAAATAACAAATAGGGG
9401 TTCCCGCAGACATTCCCCGAAAAGTGCCACCTGACGTCTAAGAAACCATT
9451 ATTATCATGACATTAACCTATAAAAATAGGCGTATCAGGAGGCCCTTCG
1. TCTTCAAGAAT

Features:

149-737 Moloney murine sarcoma virus 5' LTR
807-1616 Extended Packaging Region
1680-1735 EM7 promoter (bacteriophage T7 promoter)
1754-2151 Blasticidin resistance gene coding sequence
2310-2440 SV40 poly A signal and site
2603-3420 CMV IE promoter
3675-4988 G-protein-coupled receptor (GPCR)
5071-5646 IRES
5647-5703 Bovine α -lactalbumin signal peptide
5704-6372 'humanized' antibody light chain
6553-7146 MoMuLV 3' LTR
7683Origin of replication
9302-8442 β -Lactmase coding sequence